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JANUARY 1921

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THE ARCHITECTURAL FORUM

AN ILLUSTRATED ARCHITECTURAL MONTHLY DEVOTED TO THE ART, SCIENCE AND BUSINESS OF BUILDING

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CHURCH OF OUR LADY OF POMPEII
NEW YORK CITY

From Pencil Drawing by Harold R. Shurtleff

The
ARCHITECTURAL
FORUM

VOLUME XXXIV JANUARY 1921 NUMBER 1

Villas of the Veneto

I. THE VILLA EMO AT FANZOLO

By HAROLD DONALDSON EBERLEIN AND ROBERT B. C. M. CARRÈRE

"The . . . fabric is at *Fanzolo*, a village in the *Trevigiano*, three miles distant from *Castelfranco*, belonging to the Magnificent Signor Leonardo Erno [sic]. The cellars, the granaries, the stables, and the other places belonging to a villa, are on each side of the master's house; and at the extremity of each of them is a dove house, which affords both profit to the master, and an ornament to the place; and to all which, one may go under cover; which is one of the principal things required in a villa, as has been before observed.

"Behind this fabric there is a square garden of eighty *campi trevigiani;* in the middle of which runs a little river, which makes the situation very delightful and beautiful. It has been adorned with paintings by Messer Battista Venetiano."

Book II, Chapter XIV, p. 50.

SUCH is Palladio's own description of the Villa Emo at Fanzolo, given from Isaac Ware's translation of the *Quattro Libri dell' Architettura*, published in London in 1738.

The villa in its present state differs somewhat in arrangement from the scheme set forth in Palladio's account. The wings, which Palladio designed to house the dependencies of the villa—the stables, the granaries, the cantine or storage place for wine, the hay lofts and all the other appropriate farming accommodations—were altered internally at an early date to make provision for a chapel and a large number of rooms for guests, besides servants' quarters. Externally no appreciable change was made in these parts of the fabric. A slight deviation from the original design occurs at the rear, where the steps descending from the great hall to the garden, instead of being in one straight run, divide into two flights running in opposite directions.

Otherwise the villa today is substantially as Palladio designed it to be. Apparently it is exactly the same; the word "substantially," however, is used advisedly because of certain variations between the measurements in the plans

Garden Front and Loggia of the Main Building

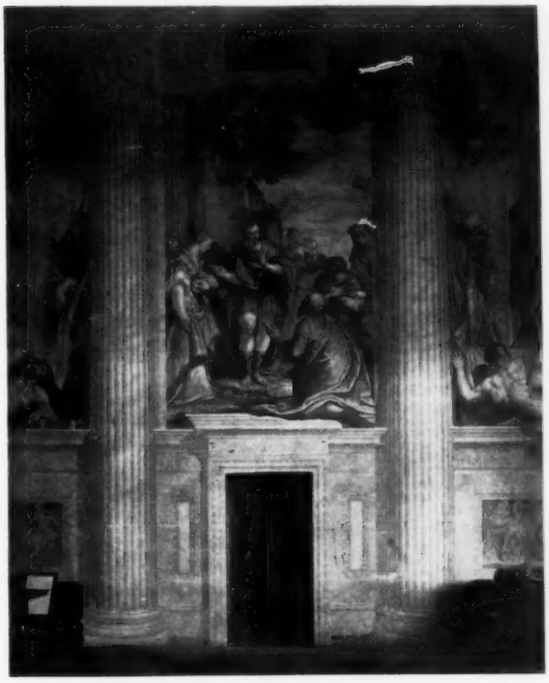
From a panchromatic photograph by Harold Donaldson Eberlein

The walls of the Loggia are enriched with fresco painting applied direct to the plaster and remain to-day in a remarkable state of preservation

SOUTH LOGGIA, VILLA EMO, FANZOLO, ITALY

and elevations, as designed by Palladio, and the measurements as actually executed.*

These departures from the architect's measurements are characteristic of all Italian buildings, as anyone familiar with the measuring of them is well aware. So universal is the phenomenon that Scamozzi, in his large edition of *The Buildings and Designs of Andrea Palladio*, appends a little table of these variations at the end of the description of each building. The master builders and their workmen presumably felt it their prerogative to take liberties with the measurements within certain limits. If they observed the spirit of the design, they assumed license to make minor variations in the letter as the work progressed.



Detail of Interior Fresco

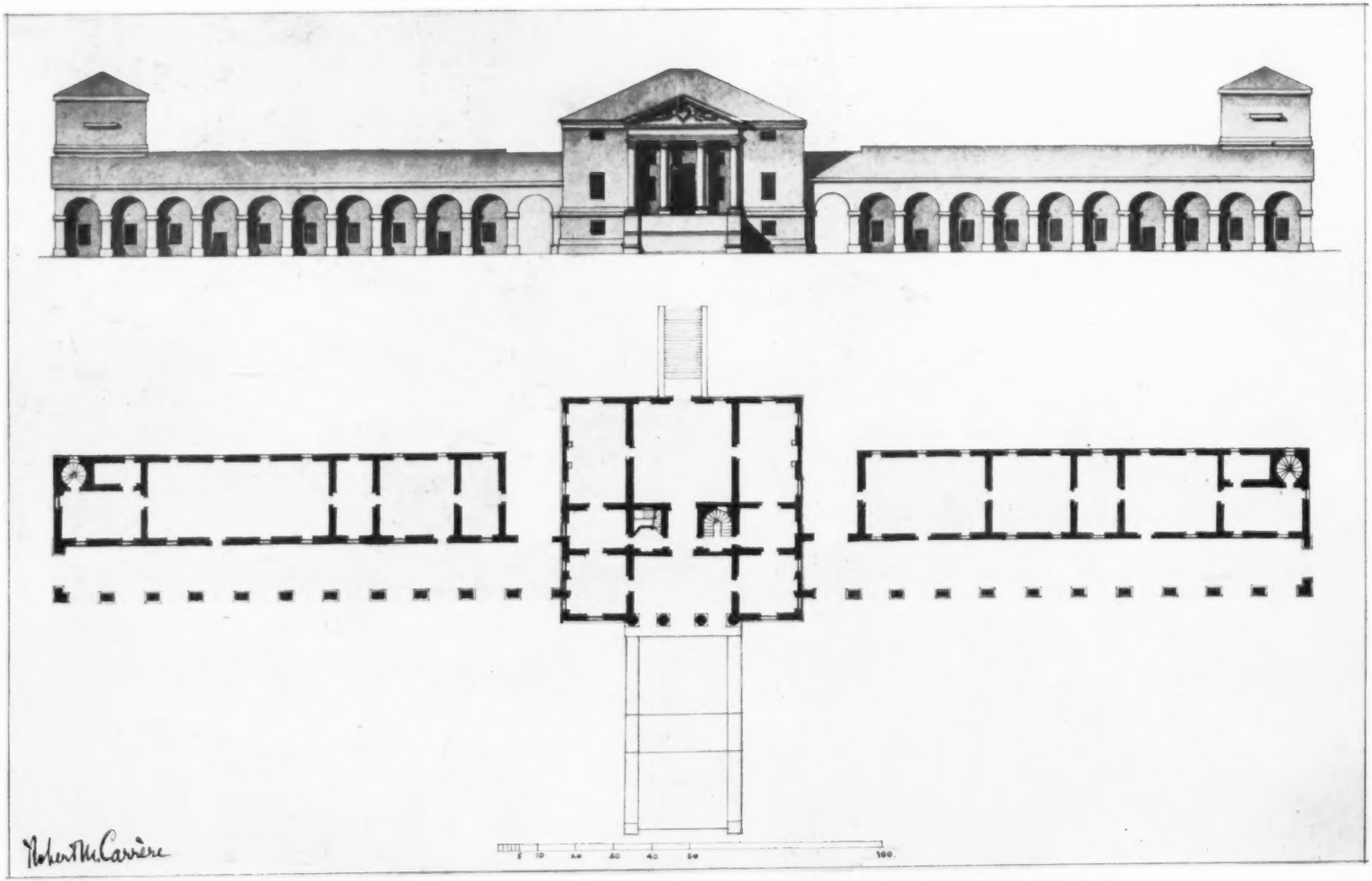
The setting of the Villa Emo is exceedingly impressive. No site more ideal than Fanzolo could be imagined for the display of a stately Palladian structure to the fullest advantage. The great Trevisan plain, flat as a table, is bounded on the north by mountains that rise abruptly, affording a background of soft greens and blues. Against this foil stands forth in crisp relief the incisive, formally ordered contour of the villa, its buff body and white trim adding contrast of color to the already striking emphasis of its presence. Nothing could be more satisfying than the simplicity and dignity of the long façade viewed from the entrance. To the north, or rear, of the villa, a geometrically disposed park stretches

*Palladio's Measurements	As Executed
Square great hall—27′	26′ 3″ x 26′ 7″
Length, large rooms—27′	26′ 7″
Width of wing loggias—15′	13′
Diameter of columns—2′ 6″	2′ 4½″
Height of columns—20′	19′ 4″
Entablature—4′	4′ 4″

The ground floor plan, the elevation, the capital detail and the entablature detail are given according to Scamozzi's measurements and are reckoned by the Vicenza foot. The other details are given according to the regular English foot.

The Vicenza foot equals 1′ 1¾″ or a small fraction more than ⅛ additional. By adding one-seventh to the measurement in Vicenza feet the equivalent is obtained in English feet.

Arcade on Garden Side of West Wing



SOUTH ELEVATION AND FIRST FLOOR PLAN OF MAIN BUILDING WITH GROUND FLOOR OF WINGS

Measured and Drawn by Robert B. C. M. Carrere

VILLA EMO, AT FANZOLO, ITALY. DESIGNED BY ANDREA PALLADIO

MAIN BUILDING FROM AXIS OF GARDEN

WEST WING AND MAIN BUILDING FROM THE GARDEN

VILLA EMO, FANZOLO, ITALY

Detail of Main Stairway

away in the distance. Of gardens, in the sense of the intimate enclosures to be found in so many other parts of Italy, there are none.

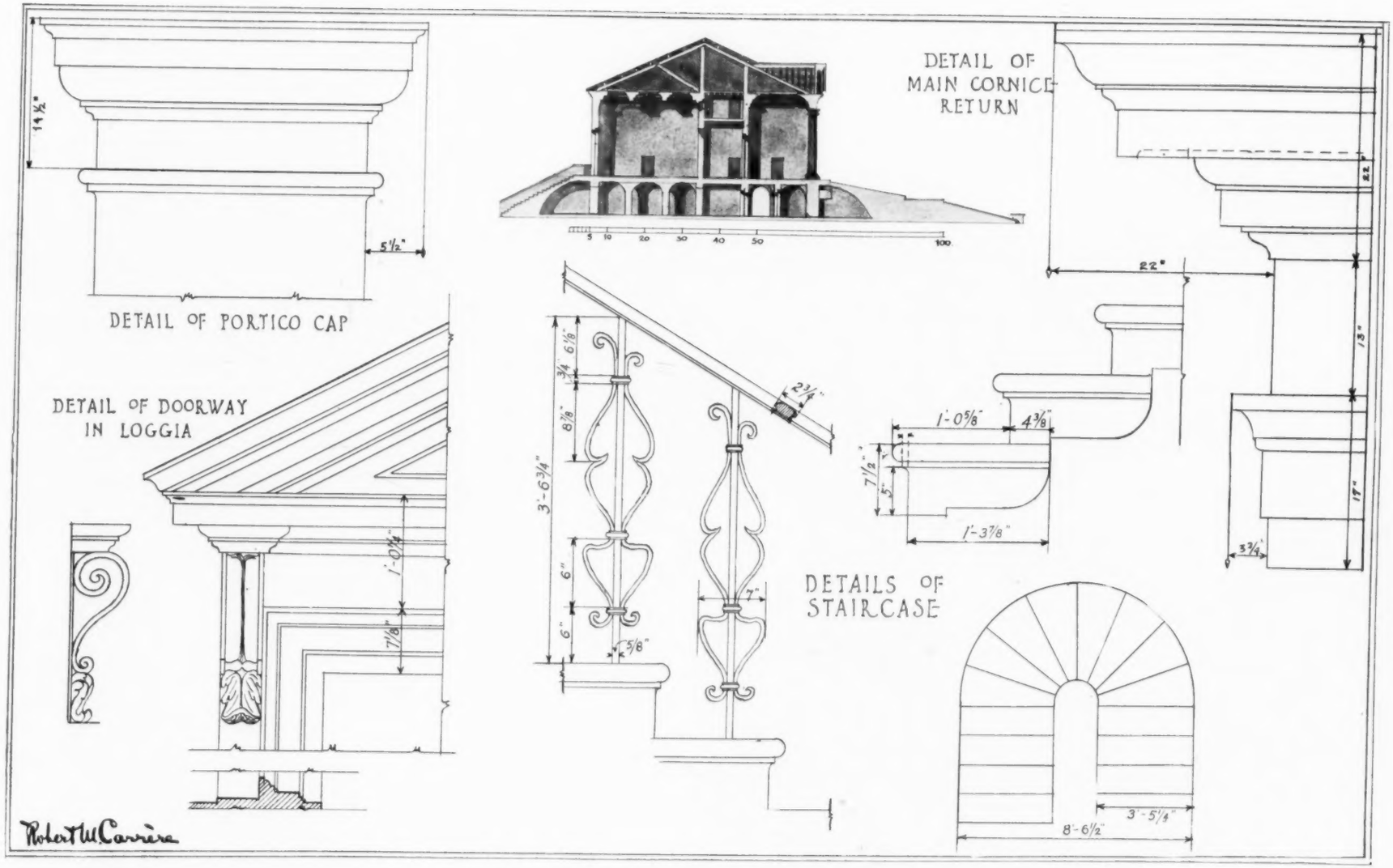
The structure is of brick coated with stucco and painted. The columns of the loggia have white stone bases and caps, while the shafts are of shaped brick coated with stucco and carefully smoothed with a *marmorino* finish. This is a common Palladian method of pillar construction, the bases being usually of stone and the caps either of stone or of moulded terra cotta painted.

No matter what the materials with which he was often obliged to execute his work, Palladio succeeded in impressing the beholder with only the nobility of his design while the quality of the substance is lost sight of. His mastery in this particular calls to mind the words of Sir Henry Wotton upon viewing the entrance of Palladio's church at the Conventa della Carità in Venice: "Mine eye hath never beheld any columns more stately of stone or marble; for the bricks having been first formed in a circular mould, and then cut before their burning into four quarters or more, the sides afterwards join so closely, and the joints concentre so exactly, that the pillars appear one entire piece, shewing how in truth we want rather *art* than *stuff* to satisfy our greatest fancy." Such expedients were so usual in stucco loving Italy that we may seriously question whether Palladio was much disturbed by the lack of what some of us would be disposed to regard as more worthy materials.

In plan the villa consists of a central block, about 70 feet square (English measure), flanked by a long straight wing on each side. These are apparently one story in height but really contain both ground and first floors, as one may see from the rear, and in front of them are arcades. The rooms in the high basement of the central block are vaulted and here are kitchens, sculleries and other domestic offices, while above the lofty first floor, the capacious attic story contains sleeping rooms.

On the plan the arrangement of rooms shown is for the first floor of the central block, and for the ground floor of the wings. The plan of the interior discloses the wonted arrangement of a great hall with smaller rooms opening from the sides. The previous allusion to Palladio's nobility of design applies with equal propriety to the imposing proportions of all the rooms which impress one forcibly by their dimensions. The subject of Palladio's theories in this respect will be more fully dealt with in a subsequent paper. Save the very simple fire-

Dovecote at End of West Wing



SECTION THROUGH MAIN BUILDING AND GENERAL DETAILS

Measured and Drawn by Robert B. C. M. Carrere

VILLA EMO. AT FANZOLO, ITALY. DESIGNED BY ANDREA PALLADIO

View of North or Entrance Front

places, the interior boasts no features of architectural adornment. The great hall was designed with a beamed and coffered ceiling, with painted embellishment, but if this part of the design was ever carried out it was covered over by a flat vault of plaster.

In lieu of moulded door trim, cornices and other items of interior architectural amenity, the rooms of the first floor are fully adorned with frescoes which include, besides the pictorial subjects displayed upon the walls of the great hall and the two adjoining long rooms at the sides, a full complement of *painted architecture*—door trim, paneled dados, pilasters, cornices and the like—very cleverly executed. The small vaulted rooms next the stairways, and the vaulted passage from the door to the great hall, are covered with arabesques after the manner of Giulio Romano.

The Messer Battista Venetiano whom Palladio credits with the painting was Giovanni Battista Farinati, sometimes called Battista Zelotti and also Battista da Verona. Battista was responsible only in part for the work and wrought as assistant to Paolo Veronese, to whom the commission had been entrusted. Upon the strength of Paolo's authenticated authorship of the frescoes, the Villa Emo has been declared a national monument.

The staircases in the Villa Emo, as in so many of Palladio's villas, are good but inconspicuous. The staircase was still, to a great extent, a utilitarian feature to be treated, it is true, with due consideration and planned for comfort and convenience, but to be kept more or less in the background and not made the vehicle of important design in a prominent position. Palladio did, as we know, design some wonderful staircases, and the treatment of the staircase, by his own testimony, was a subject in which he was deeply interested and which he deemed worthy of the utmost consideration on the score of design. It was chiefly left, however, to the architects of a later generation—especially the masters who worked in the baroque style—to develop the magnificent staircase in the villas and palaces of Italy.

If we are tempted to criticise unfavorably the lack of domestic quality in the villas of the Veneto as compared, for example, with the villas of Tuscany, or to condemn the placing of farming dependencies close to the master's quarters, we must remember two things: First, the villa was usually the center of a great agricultural estate, and it was the ancient custom of the land to concentrate all the farming activities under the eye of the master or his bailiff. Second, so far as the villas belonging to the Venetian nobility were concerned, they were usually occupied by their masters only a small part of the year. Palladio draws an alluring picture of country life when he writes:

"The city houses are certainly of great splendour and conveniency to a gentleman who is to reside in them all the time he shall require for the administration of the republic, or for directing his own affairs. But perhaps he will not reap much less utility and consolation from the country house; where the remaining part of the time will be passed in seeing and adorning his possessions, and by industry and the art of agriculture, improving his estate; where also by the exercise which in a villa is commonly taken, on foot and on horseback, the body will the more easily preserve its strength and health; and, finally, where the mind, fatigued by the agitations of the city, will be greatly restored and comforted, and be able quietly to attend the studies of letters, and contemplation.

"Hence it was the antient sages commonly used to retire to such like places; where being oftentimes visited by their virtuous friends and relations, having houses, gardens, fountains, and such like pleasant places, and above all, their virtue, they could easily attain to as much happiness as can be attained here below."

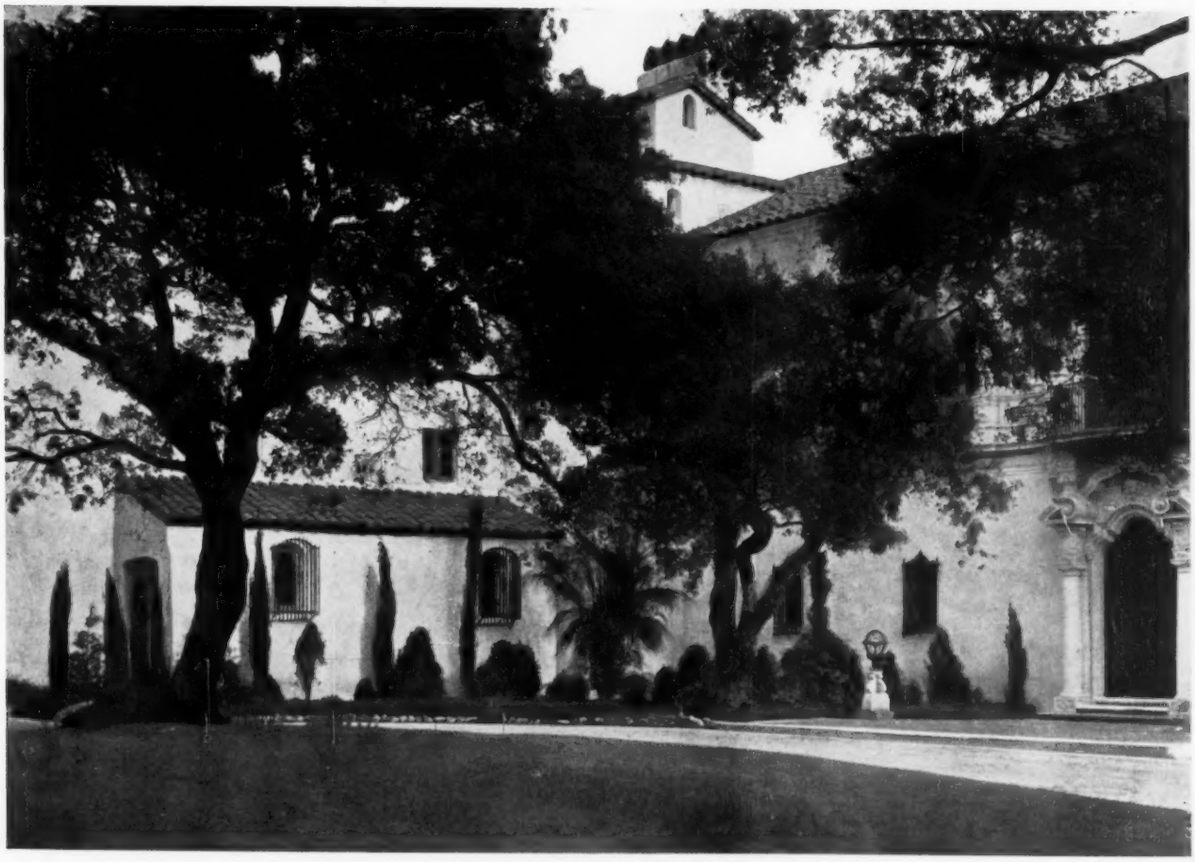
As a matter of fact, however, "the administration of the republic" and "the agitations of the city" engrossed most of the noble Venetians' time, and if they spent as much as six weeks or two months of the year at their villas they were giving their "virtuous friends and relations" a good opportunity to come and visit them there. Under such brief occupancy, therefore, the atmosphere of domesticity did not assert itself to the utmost. This fact we must accept and be content to admire Palladio's villas as superb pieces of composition.

MAIN ENTRANCE DETAIL

HOUSE OF MRS. WILLIAM H. BLISS, MONTECITO, CALIFORNIA

CARLETON MONROE WINSLOW, ARCHITECT

SERVICE WING FROM FORECOURT



SERVICE WING AND MAIN FRONT

HOUSE OF MRS. WILLIAM H. BLISS, MONTECITO, CALIFORNIA

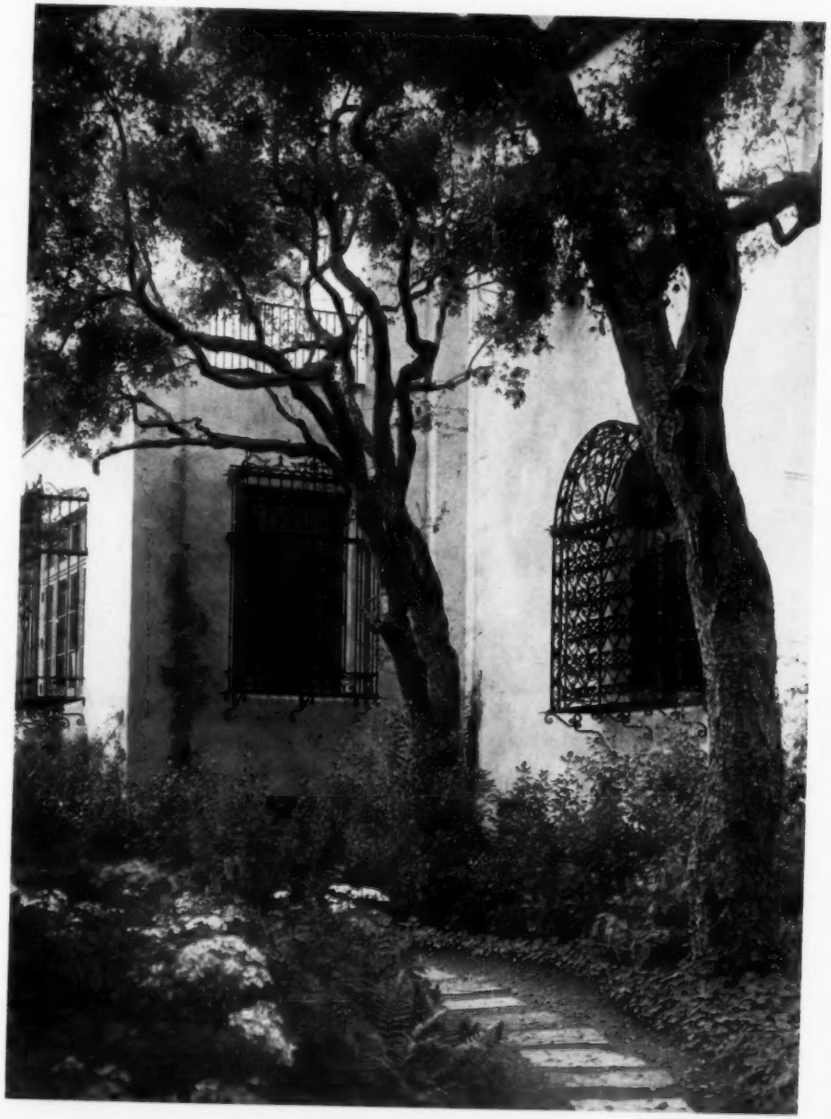
CARLETON MONROE WINSLOW, ARCHITECT

TERRACE FRONT FROM THE SOUTHEAST

VIEW IN PATIO TOWARD TERRACE

HOUSE OF MRS. WILLIAM H. BLISS, MONTECITO, CALIFORNIA

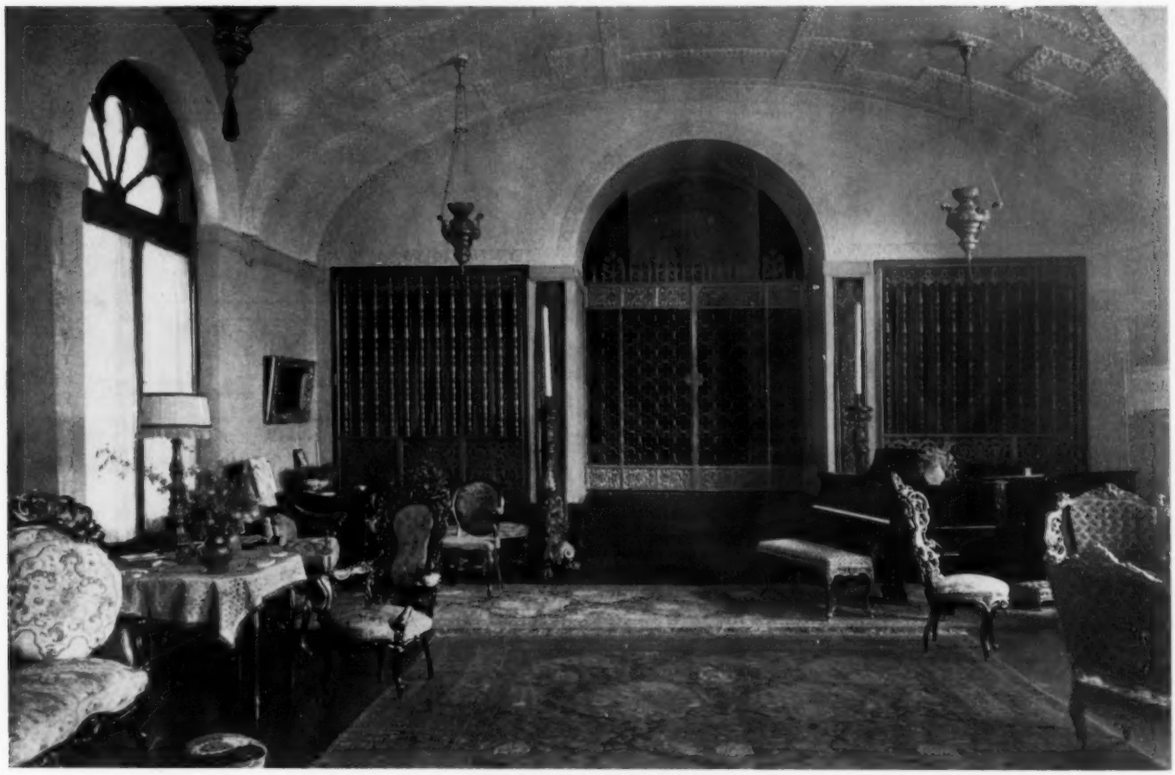
CARLETON MONROE WINSLOW, ARCHITECT



SOUTHWEST WINDOWS AND STEPS TO TERRACE

HOUSE OF MRS. WILLIAM H. BLISS, MONTECITO, CALIFORNIA

CARLETON MONROE WINSLOW, ARCHITECT



DETAIL OF MUSIC ROOM

DINING ROOM DOORS FROM LONG HALL

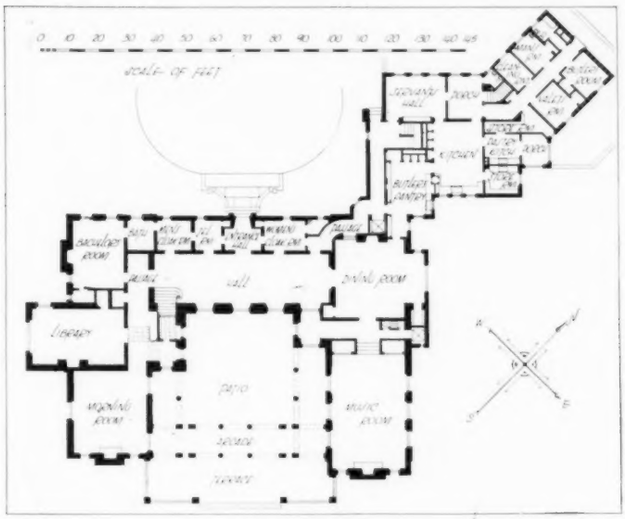
HOUSE OF MRS. WILLIAM H. BLISS, MONTECITO, CALIFORNIA

CARLETON MONROE WINSLOW, ARCHITECT

"Casa Dorinda," a California Country House

CARLETON MONROE WINSLOW, ARCHITECT

MANY interesting possibilities attend the development of a large and important country place in Southern California where extensive grounds include a primeval growth of live oaks and where the various buildings are to be sufficiently ample for an adequate interpretation of the type of architecture which is best adapted to the locality. An unusual opportunity, therefore, was presented in the planning of the California home of Mrs. William H. Bliss at Montecito, near Santa Barbara, and the architect, Carleton Monroe Winslow of Los Angeles, has made wise use of unusual possibilities.



Plan of Main Floor

At the main entrance from the public road the grounds are screened by a high stucco wall. A gate lodge stands just within the gates and the red Spanish tiles of its low pitched roof are visible over the stucco walls. Within the grounds the driveway crosses masonry bridges over several "arroyos" or little streams and ends in a broad sweep before the residence itself. The house which is the center of this important estate is a large rambling structure designed in a highly developed version of what has come to be known popularly as the Spanish mission style with an interesting arrangement of large apartments grouped about a patio—a type of building which has always been identified with the development of this region and which is particularly well suited to the climate of California.

The effect, to a visitor, is that of a picturesquely disposed country place which might have been the result of gradual growth or development during a long period. Much of the appearance of age has been given the house by the use of antique gates and grilles of wrought iron from an old church in Mexico and by the presence of many old live oaks. The entrance façade is a broad expanse of brick masonry covered with buff stucco with many small windows screened with iron grilles to the right and left of the main doorway, the door itself being of oak studded with old Spanish nail heads. Above there are five large windows which open from a loggia, these windows and the main doorway being adorned with richly sculptured decoration carved from Boise sandstone of a warm gray which affords an interesting contrast with the buff, rough surfaced stucco of the walls.

The opposite side of the house, facing toward the south, is planned with a broad terrace upon which open the arches across one side of the patio. These arches are filled in with wrought ironwork, many of the grilles being from old buildings and others made by present day craftsmen from the old patterns.

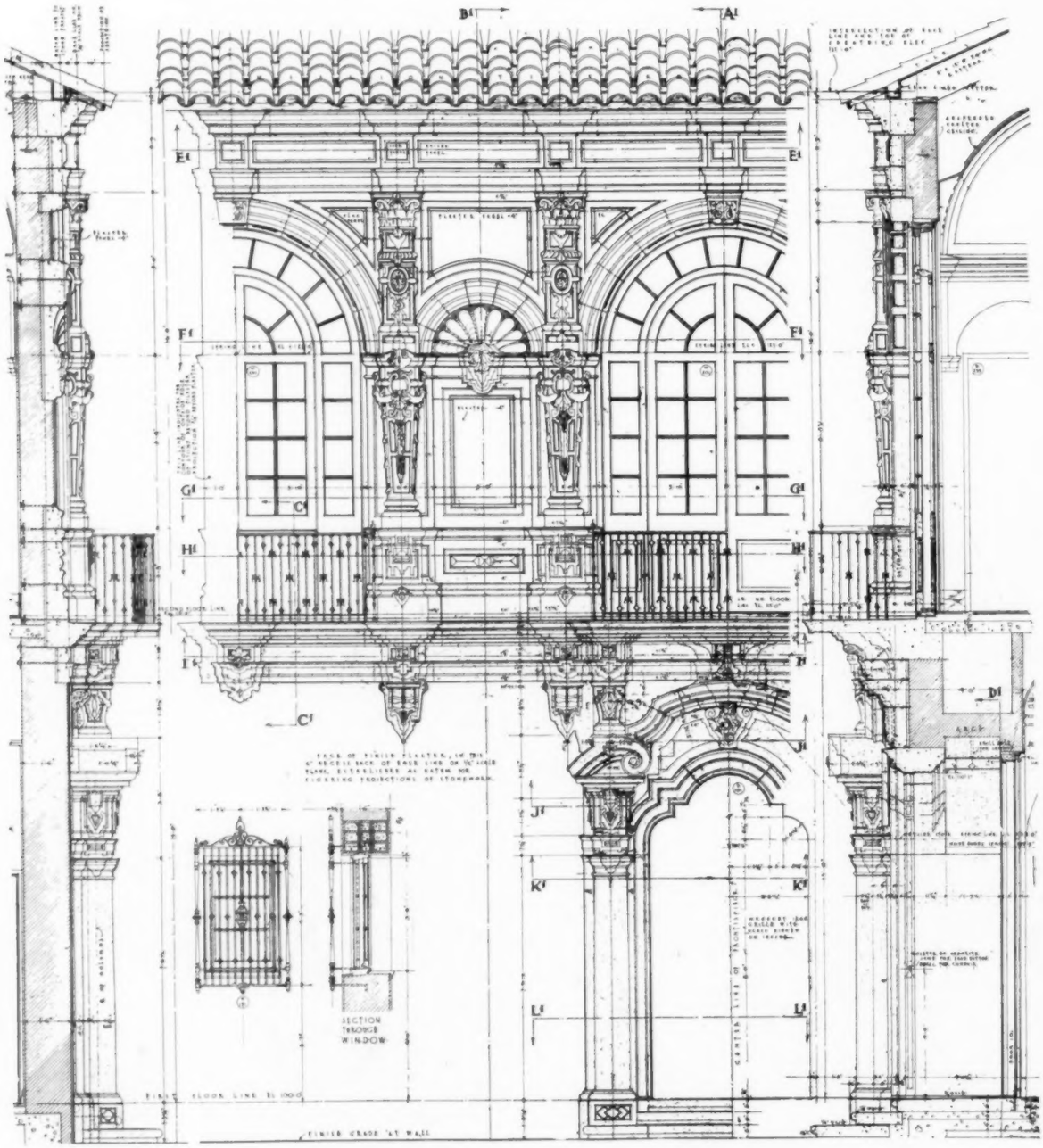
The interior arrangement of the house fulfills the promise made by the exterior for it presents a number of large, dignified rooms placed, in Spanish fashion, about a central courtyard which is floored with square paving quarries. The interior treatment, as will be seen from the illustrations, is exceedingly simple. Walls, for the most part, are of slightly roughened plaster, painted, and some

Baroque Mantel in Music Room

of the ceilings are vaulted while others show the use of wooden beams. Most of the woodwork throughout the house is of American walnut.

From the tower is had a view such as only California could offer with vineyards, villages and mountains spread out in panoramic form. To reach the tower an elevator is provided, the shaft being hidden by the low gable at one corner of the tower which may be seen in one of the illustrations.

A great part of the success of this house is due to the careful selection of materials. Care was taken to choose stone and stucco for the exterior which produced the effect which the architect meant to create and roofing tile was specially burned to give the color and texture of old weathered tiles. Ironwork plays an important part in Spanish architecture and in this instance much has been used, suitably austere or elaborate as its purpose seemed to demand. Equal care has been given to the details of the interior and such accessories as lighting fitments and grilles of wood and metal and such details as the laying of floors have received careful study, and the result is seen in their harmonious fitting into their surroundings.



Detail of Entrance Doorway and Central Feature of Main Front

Architectural Expression in Concrete

By FRANK J. HELMLE

IN this article Mr. Helmle states some of the fundamental principles underlying the development of architectural design suited to reinforced concrete construction. He is a member of the firm of Helmle & Corbett, architects of the Varick Building illustrated herewith, which is notable as an example of design in concrete. The plates following illustrate other recent buildings and on page 37 will be found brief descriptions of them. In a later issue we will present an article describing interesting industrial work in concrete of Lockwood, Greene & Co., Architects and Engineers. — THE EDITORS

RECENT years have seen a constantly widening field for the development of architecture; the greatest evidence of this is no doubt in industrial building and in meeting the special demands which this type of work imposes upon the architect there is presented an opportunity to not only devise new forms of architecture but to greatly increase the power and prestige of the profession if the real character of the conditions is recognized and an honest, straightforward solution sought.

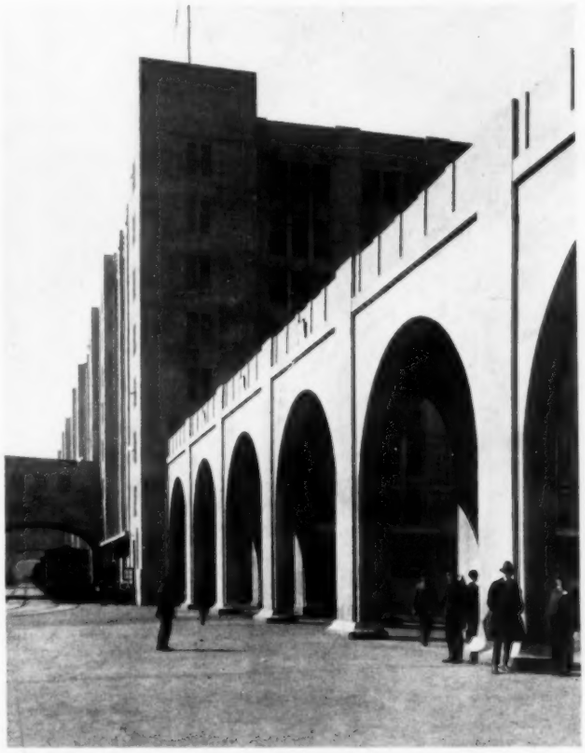
It has been proved beyond question that there are definite advantages accruing to any manufacturer who has the foresight to erect buildings of good architectural design that will be a stimulus to the pride of local citizens and a satisfaction to the workers employed in the buildings. It has likewise been definitely proved in many cases that no large additional expense is involved when an industrial building is given an architectural value by means of a well considered scheme in which the architecture is supplied by good proportions and massing of the structural features.

The particular opportunity that the industrial building presents to architects is the development of a form of architectural expression that will be in accord with the characteristics of special materials and types of construction that are well suited, from the standpoint of service and economy in both first cost and maintenance, to industrial buildings.

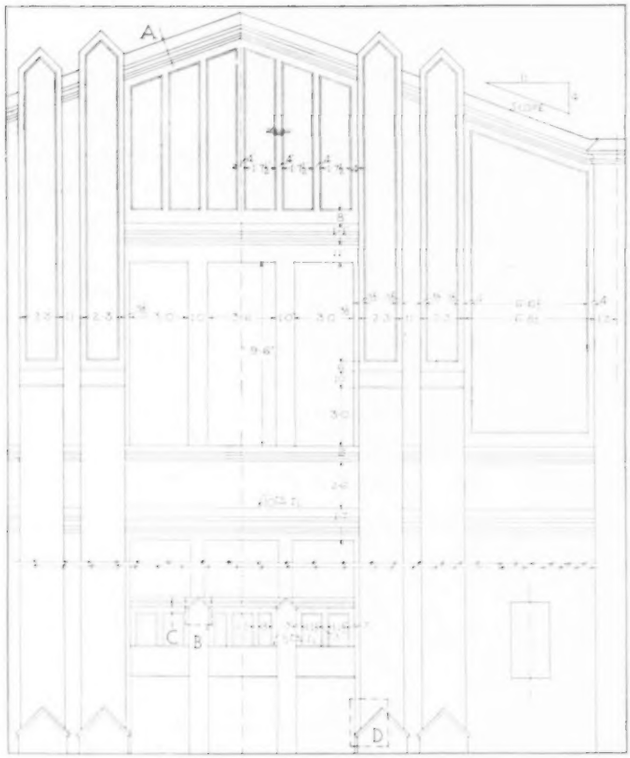
Of the types of construction suited to industrial buildings there is probably none better than reinforced concrete. The development of this form of construction has been rapid in spite of a great many handicaps placed in its way, but its now well recognized advantages of permitting speed in construction, use of low priced labor, fireproofness, low maintenance costs and its adaptability to the varying conditions of industrial requirements have made it a factor that must be recognized by architects in designing not only factories but loft buildings and many other types where large floor space must be provided at a low cost.

Ever since it passed the experimental stage reinforced concrete has been valuable as an economical material. Just before the war the margin in its favor as against structural steel fireproofed was hardly more than 10 or 15 per cent of the cost of the structural frame of the building, or about 5 per cent of the total cost of the structure. Early in 1920 this margin had risen to approximately 40 per cent of the cost of the structural frame due, of course, to the excessive cost of structural steel, and the margin at the present time is about 25 per cent.

Economy in construction through the use of concrete is not the least of its advantages; it is readily adapted to the varying requirements of plan and does not impose such rigid conditions as many suppose. The usual size of bay in a concrete building is 20 x 20. Smaller bays down to say 16 x 16 would be a little more



Detail of Connecting Bridges at U. S. Army Supply Base, Brooklyn, N. Y. All Detail in Structural Concrete
Cass Gilbert, Architect



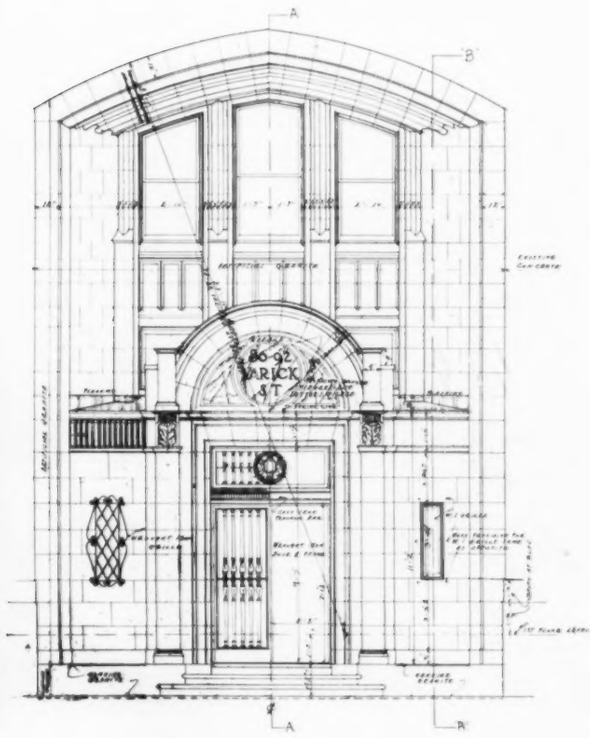
Detail of Upper Stories, Varick Building

economical, but the saving is so slight that as a rule the usefulness of the building with 20-foot bays is enough greater to warrant the slight additional cost. Bays can, of course, be made considerably larger than 20 x 20 if the use to which the building is to be put requires it.

One of the objections long brought to the use of concrete in structures of more than a few stories has been the fact that it was thought necessary to make reinforced concrete columns in the lower stories of great size. While it is true that the size of a reinforced concrete column increases with the increase of load to be carried more rapidly than does the size of a steel column, this increase is not detrimental except in rare instances. A reinforced concrete column in the first story of a 12-story building having 18-foot spans in both directions and designed to carry live loads of 150 pounds per square foot would be a round column 30 inches in diameter. If for some special reason it would be necessary to make the columns in the lower stories smaller than this, structural steel cores could be used at a comparatively small additional expense. This would use up only a small part of the saving effected by the use of reinforced concrete for the rest of the structural members.

It sometimes happens that it is necessary

Construction Progress View of Varick Building
Helmle & Corbett, Architects

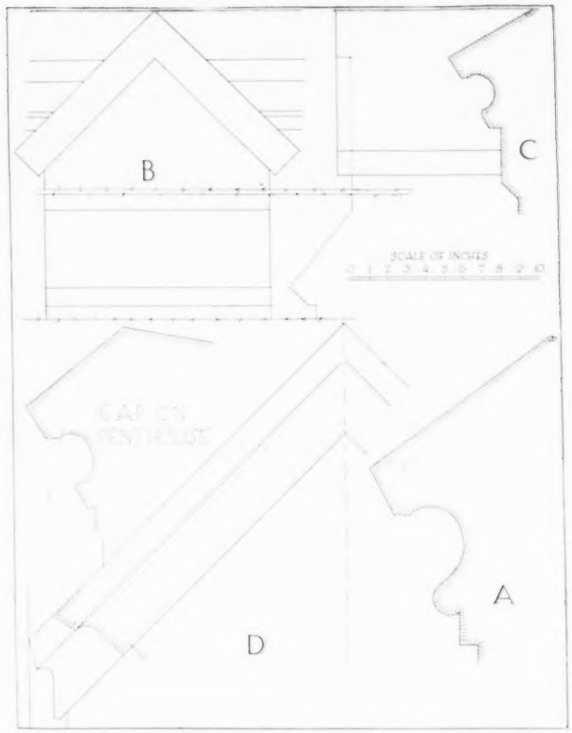


Entrance Detail in Artificial Granite

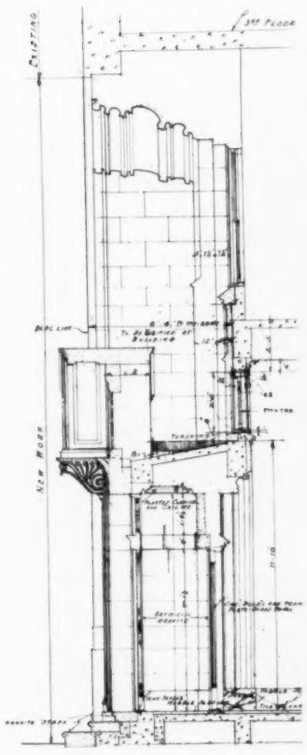
to construct a long span girder in a building carrying a heavy load. The most common cause for this in industrial buildings is the existence of railroad tracks on the ground floor which disturb the column spacing on that floor and over which girders have to be constructed to carry the regularly spaced columns in the stories above. Sometimes reinforced concrete can be used for these girders, but in cases of extreme loads where headroom is limited, steel plate girders carried on steel columns can be introduced without affecting the economy of the surrounding reinforced concrete structure.

There are three types of floor construction in more or less frequent use: the beam and girder type, the flat slab type and the method which involves the combination of hollow tile and concrete. Each of these types has certain advantages that best fit it to particular conditions.

The beam and girder type is one of the early methods of floor construction and has simplicity to recommend it. The newer form flat slab construction has a number of advantages over it and in cases where flat ceilings or where the greatest number of stories are wanted in a given height it is invariably used. The flat slab construction occupies much less vertical height for floors owing to the absence of girders and beams and it also requires the minimum number of sprinkler heads.



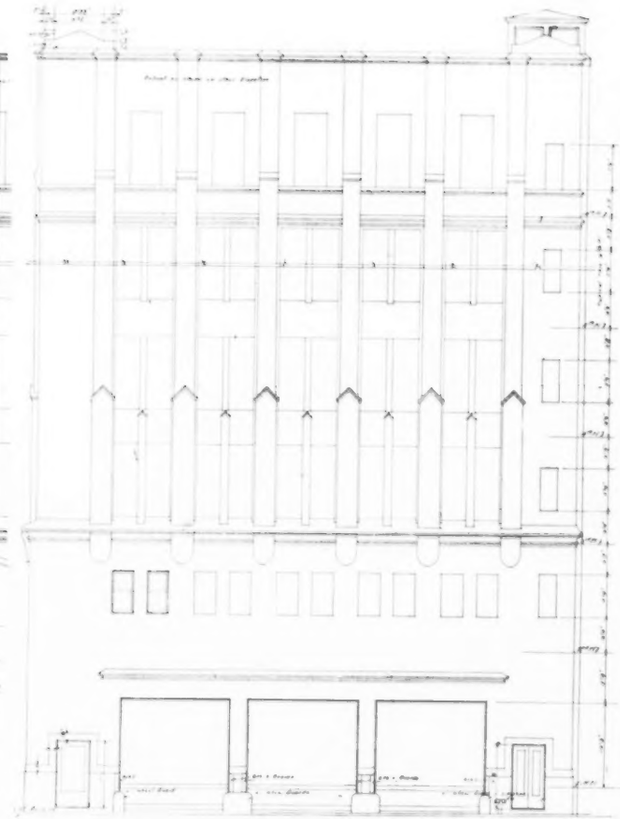
Detail of Concrete Buttresses and Mouldings



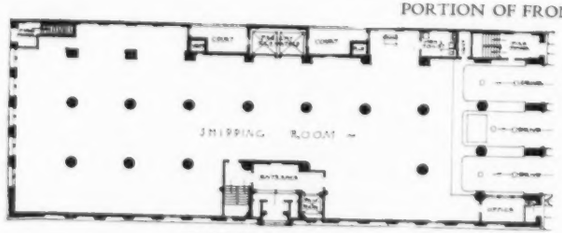
Section through Entrance

Perspective of Completed Varick Building
Helmle & Corbett, Architects

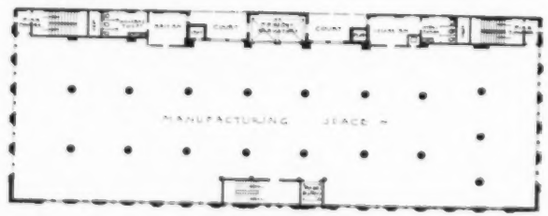
PORTION OF FRONT ELEVATION



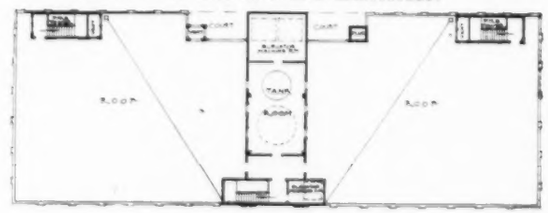
PORTION OF SHIPPING END ELEVATION



FIRST FLOOR PLAN



TYPICAL FLOOR PLAN



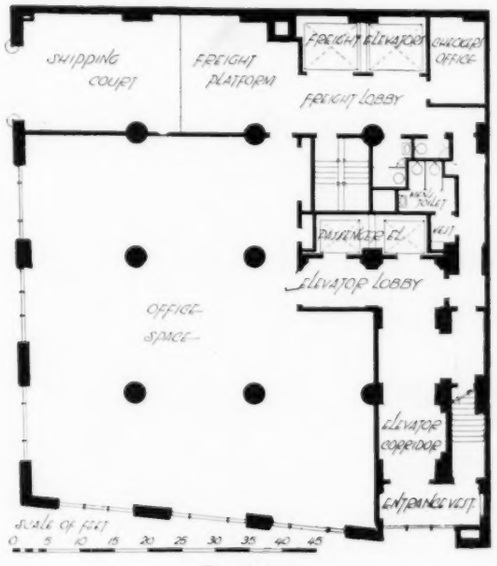
ROOF PLAN

VARICK BUILDING, NEW YORK, N. Y. (All Concrete Construction)
HELMLE & CORBETT, ARCHITECTS

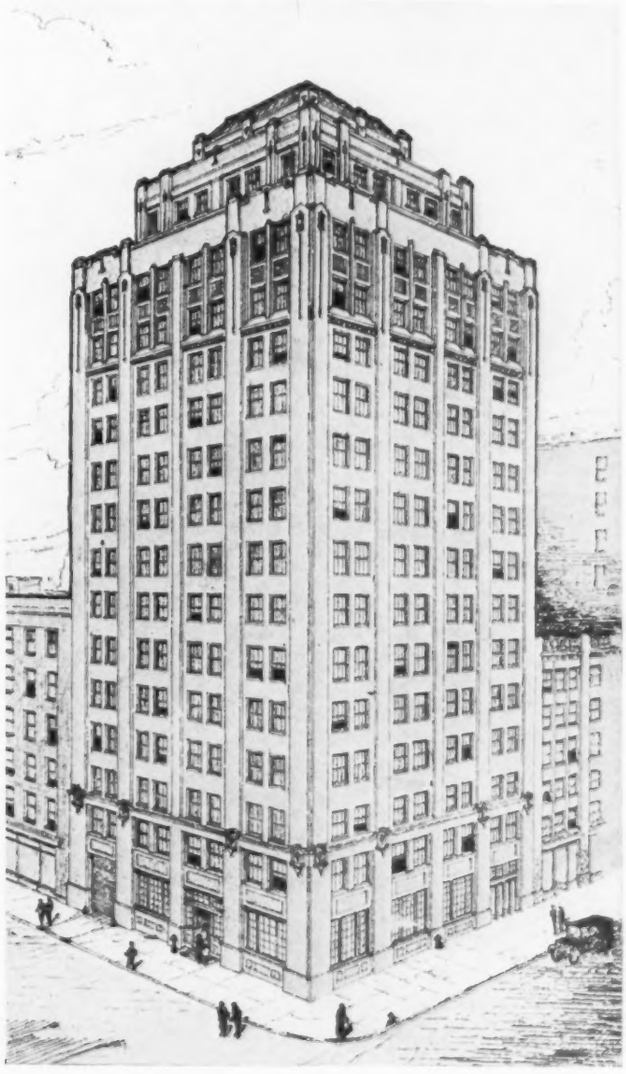
There is little precedent which we may follow in designing concrete structures. In the case of any building it is supposed that it has a definite purpose and it is the architect's duty to interpret this purpose through his design and in conformity with the character of the materials in which it is executed. In designing a concrete building in which the architecture will be had by means of pleasing forms of the structural parts there is demanded of the architect a full knowledge of the physical properties of the material and the practical and economical methods of construction which are employed in using it.

Architectural treatment and ornamental detail should be carefully considered on any building. Most of our buildings are very much over decorated. Simplicity should be the watchword in architecture. If architects designing in concrete would give a little thought to proportion in their design, we would have some very creditable buildings in this material. The architectural treatment best adapted to reinforced concrete is that which depends upon broad lines and proportions rather than upon fine detail. It is almost impossible to obtain in reinforced concrete which is cast in place on a building the absolute perfection of texture and alignment which can be obtained with cut stone or brick. Such excellence of workmanship can, however, be obtained as is required by the great majority of buildings. In designing mouldings and cornices it must be remembered that these are constructed in most cases from wood forms and their character should be of the simplest so that the construction of the form work may be handled without great expense or difficulty. The variety of mouldings should be kept to the absolute minimum because the construction of many differing forms becomes an expensive item. Moulding sec-

In this 17-story, all-concrete building a feature has been made of the treatment of the surface of the lower floors giving them the appearance of granite. Expanded metal with the smallest available mesh is wired to the outside surface of the steel. In the two inches between this mesh and the form is placed ¼-inch aggregate of pink and white quartz, feldspar and olivine, mixed one part of white cement to two of aggregate. After it had been built up to a height of two feet the balance of the form was filled with common structural aggregate. There was immediate fusion and perfect bond but it was necessary to keep the outside concrete about one foot higher than the structural concrete to prevent mixing. After the forms have been stripped, the surface is patched where necessary, washed with white cement, and then allowed to stand, when it is bush hammered to give the completed granite appearance. The remainder of the building is surfaced with electric surfacing machines and coated with a waterproofing compound providing a uniform color.



First Floor Plan



Perspective View

Concrete Building for Hide and Leather Realty Company, New York, N. Y.

Thompson & Binger, Inc., Engineers

Testing Room in Central Wing of Bureau of Standards Industrial Laboratory

tions should also be designed so that the forms can readily be removed after the concrete is set without doing damage to the finished work. Full use should be made of simple forms of ornament such as recessed panels which are easily had by slightly increasing the thickness of the forms where such a panel is desired.

The manufacture of pre-cast ornament has been well developed and competes, in many cases, with terra cotta. It is not often that pre-cast ornamentation competes with structural ornament for the reason that where the detail of the ornamentation is such that satisfactory results can be obtained by casting in place, this method is much cheaper. The pre-cast method of construction is called upon when the fineness of the detail is such that satisfactory results could not be obtained by casting in place in wood forms.

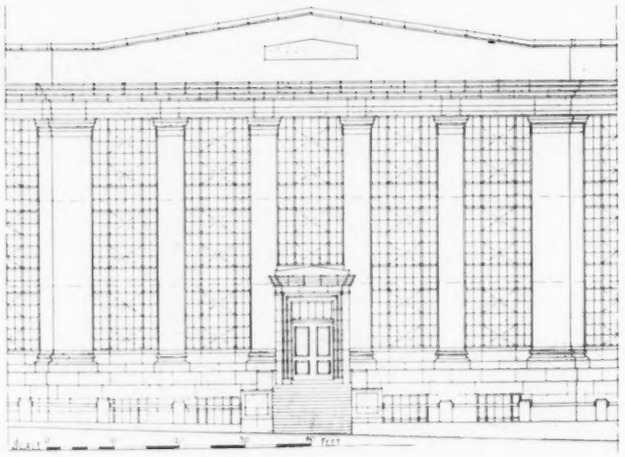
There are no advantages from the standpoint of economy in combining other materials such as brick, terra cotta or tile with concrete. Concrete is always the cheapest. From the point of view of architectural effect, however, there are often excellent reasons for combining other materials with concrete and there are endless possibilities in this direction. Efforts to provide finish of surface by varying the composition of the concrete, using one mixture for the facing and another for the body of the walls, have not as a rule been successful. It has seldom proved practicable to use a different aggregate for the exterior surface of concrete work from the aggregate used for the body of the walls. In the case of a building where there is a considerable amount of reinforcement two inches from the surface and where there are many corners and angles the attempt to use two different kinds of aggregate seriously impedes the progress of the work and greatly adds to the expense.

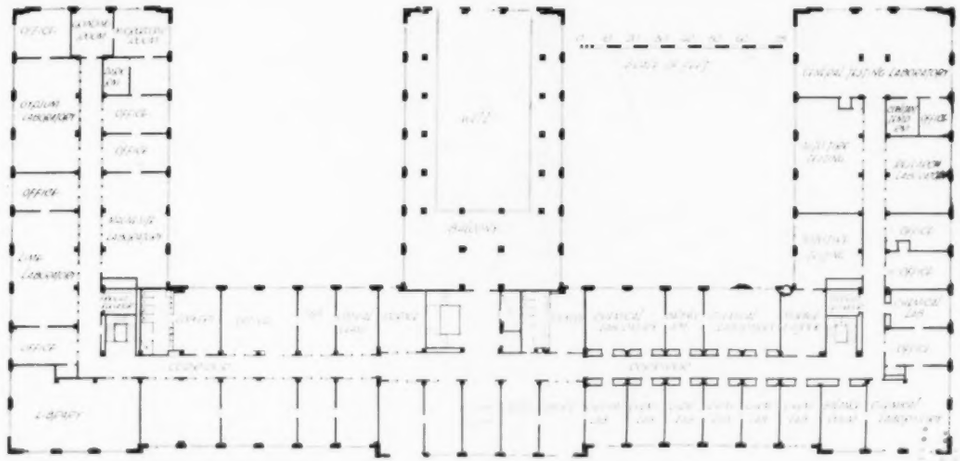
The usual type of surface treatment at the present time is rubbing, with or without the application of a coating on the rubbed surface. Hammering of surfaces is not usual except for small areas for architectural effect. Rubbing costs about 10 cents per square foot, coating 5 cents and hammering 20.

Construction Progress View of Bureau of Standards Laboratory Showing Concrete Frame Completed and Brick and Stone Facing Being Applied

Donn & Deming, Architects

GENERAL VIEW



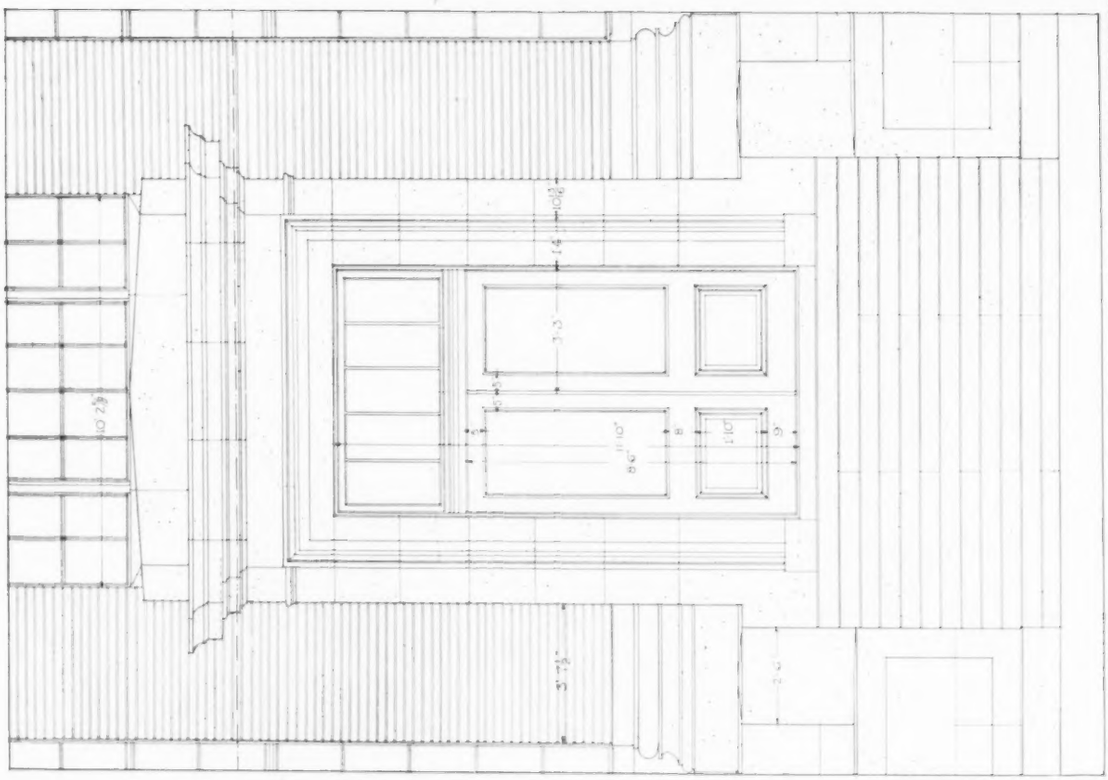


DETAIL OF CENTRAL BAY AND SECOND FLOOR PLAN

INDUSTRIAL LABORATORY, U. S. BUREAU OF STANDARDS, WASHINGTON, D. C.

DONN & DEMING, ARCHITECTS

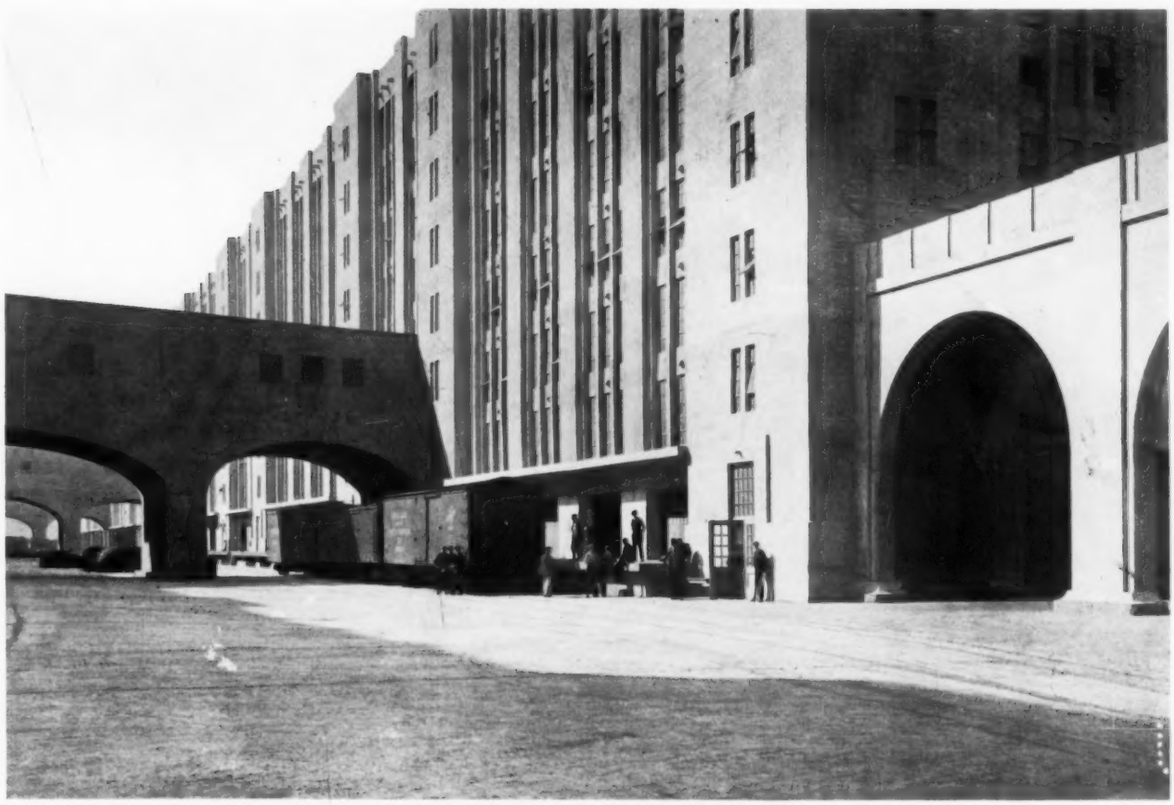
DETAIL OF DOORWAY AND END BAY



INDUSTRIAL LABORATORY, U. S. BUREAU OF STANDARDS, WASHINGTON, D. C.

DONN & DEMING, ARCHITECTS

ADMINISTRATION BUILDING AND WAREHOUSE "A"



DETAIL IN COURT BETWEEN WAREHOUSES

U. S. ARMY SUPPLY BASE, BROOKLYN, N. Y.

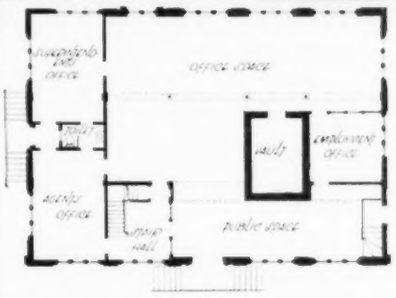
CASS GILBERT, ARCHITECT

GENERAL VIEW

MAIN ENTRANCE DOORWAY

THE SCHWINN BUILDING, CHICAGO, ILLINOIS

WALTER W. AHLSCHLAGER, ARCHITECT

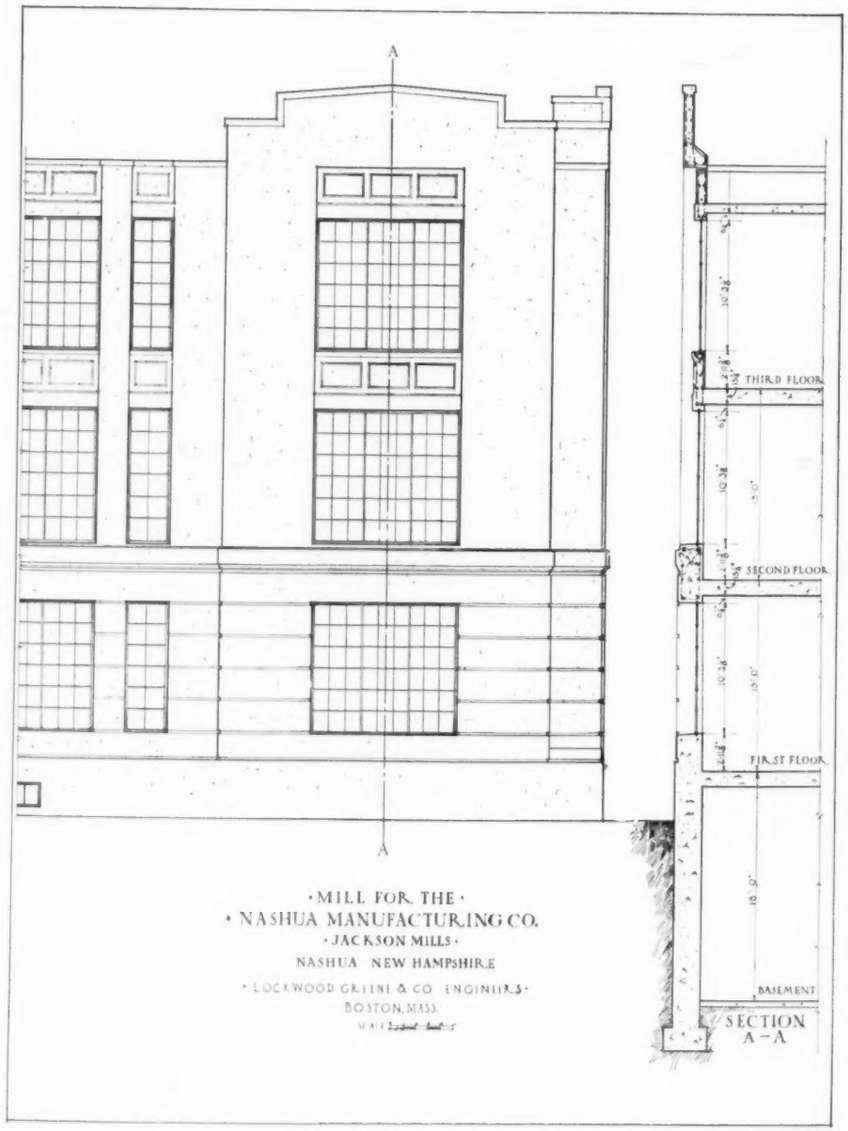


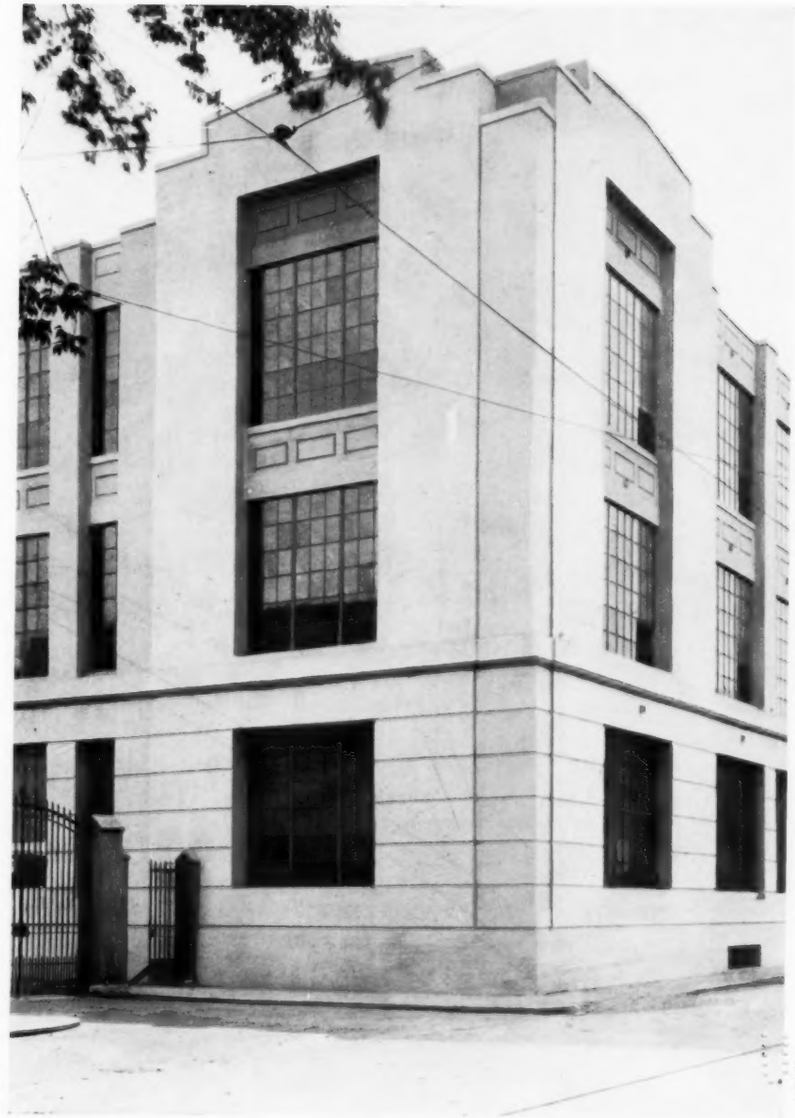
OFFICE BUILDING AND FLOOR PLAN

GENERAL VIEW

BUILDINGS FOR JACKSON MILLS, NASHUA, N. H.

LOCKWOOD, GREENE & CO., ENGINEERS





DETAIL AND VIEW OF CORNER PYLON

BUILDINGS FOR JACKSON MILLS, NASHUA, N. H.

LOCKWOOD, GREENE & CO., ENGINEERS

DECORATION & FURNITURE

Jeanne Taylor, *Associate Editors*, Leland W. Lyon, R.A.

The Architect's Control of Furniture and Decoration

ANY subject on which widely diverging opinions have developed strongly in a professional fraternity is at best difficult to approach from an editorial viewpoint. Complicate such a problem with the conflicting interests of professional and contractual service, the business interests of manufacturer, wholesaler and retailer, indeterminate ethical standards and predetermined policies based on erroneous conclusions,—and one may obtain a fair conception of the inter-related complications involved in the subject of interior decoration in its business phases.

When Gordius, the peasant king of Phrygia, had tied the Gordian knot, no man seemed able to unloose it, even for the promised reward of rulership over all Asia. Alexander the Great in his characteristic manner solved the problem by cutting this knot in two with one sweep of his sharp sword—and later fulfilled the prophecy. The methods of the great Alexander sometimes lacked finesse but usually they were productive of immediate results. Recognizing in this question of the business factors involved in interior decoration a very complicated knot, we can take precedent from Alexander and approach the subject most directly by cutting it through and carefully examining the cross section. Only by understanding conditions as they really exist can constructive comment and suggestions develop into the ultimate establishment of standards of practice in this field, fair to all who wish to be fair, and based on sound merchandising principles.

We shall therefore consider in some detail the present conditions and practice in furnishing and decorating under the definite divisions of: (*a*) The consumer field; (*b*) Merchandising and distributing; (*c*) Production. These fields are represented: (*a*) By architects and interior decorators who purchase for, or sell direct to, clients; (*b*) By the wholesale furniture and decoration trades; (*c*) By the manufacturer who sells this trade or who maintains an independent distributing organization.

RAISON D'ETRE

THE publication of the January 1921 issue of THE ARCHITECTURAL FORUM marks the first appearance of the Decoration and Furniture Department. From time to time during past years consideration has been given in the editorial pages of THE FORUM to various subjects which properly come under this heading, and the actual creation of a special department to cover this subject has consequently been a matter of evolution.

Before this step was taken careful analysis was made covering a large number of architects' offices to determine the exact interest of the profession in this subject. The letters which were sent out evoked a strong response and showed definite interest greater than had been anticipated. Naturally, many opinions were expressed regarding the business phases of this question and much general information was obtained. In this first article, therefore, an outline of such phases of interior decoration is given. The attention of readers is particularly directed to a careful analysis of points brought out in the article and suggestions and constructive criticism are invited.

The Decoration and Furniture Department will of necessity cover a variety of subjects coming naturally under this heading. It is the intention of the editors, however, largely to confine articles which will appear in this Department to suggestions and descriptions regarding furniture and materials available in stock rather than those made from special design. It is a well known fact that furniture manufacturers are successfully producing not only modern furniture of excellent design but are following closely the desirable period designs which have created interesting and artistic precedents. In the production of fabrics and other decorative materials, evolutionary steps have been taken in the past few years and today there is available a vast selection of furnishings and decorations with which the architect may carry out interiors suitable for every type of building. It will be the purpose of this Department, therefore, not only to urge certain necessary reforms in business practices and relationships, but to describe in text and plate illustrations successful examples of interior design and composition. It is also proposed to bring to the attention of architects interested in pursuing this branch of the profession information as to available furniture and materials, market conditions, and the general attitude of the wholesale decorators' trade toward co-operation with the architectural profession.

The Viewpoint of the Architect

As a result of contact with various phases of furnishing and decorating service through architects' offices, we were led to realize early in this analysis that many conflicting viewpoints were held and that practice has been in no manner standardized. In order to be certain that the chaotic conditions disclosed by preliminary analysis of this subject applied generally, THE ARCHITECTURAL FORUM has recently carried out an investigation covering over 1,000 offices of architects. The purpose of this investigation was to determine: (1) Whether or not the

architect furnishes interior decoration service for his clients; (2) What the architect charges for such service; (3) The architect's present relations with the dealer and manufacturer; and (4) The architect's method of handling furnishing and decorating projects.

The results of this analysis showed an interest in this subject far beyond that which had been expected. Hundreds of letters now in our editorial files show not only that the architect does this work and is interested in doing it, but that he feels the need of standardized service charges and improved relations with the dealer and manufacturer. He resents the intrusion by certain classes of interior decorators, as will be discussed in later paragraphs.

One of the most frequent complaints which have been made by architects in the course of this investigation is that the wholesale trade discriminates against the architect in the matter of discounts, allowing interior decorators a much greater discount and in many cases refusing discounts entirely to the architect. There is no question that this condition exists, but as there are two sides to every story it is only fair that these be presented because of their bearing on later conclusions in this series of articles.

We have been informed that some two or three years ago in New York a meeting was held including members of the wholesale decorators' trade and interior decorators. At this meeting it was decided to cut down the discounts allowed architects. While it may be true that interior decorators used their collective purchasing power in urging this course, it is also true that the manufacturer and distributor who refuses to allow an equal discount to the architect has at least businesslike grounds for so doing. The conditions on which this attitude is based are thus explained by manufacturers:

The interio decorator is essentially a contractor who purchases on his own account at wholesale prices and resells to his clients at the retail figure or in some cases the highest price he can get. On the other hand, the average architect purchases in behalf of his client and allows all discounts to accrue to the benefit of the client or, in other words, through the present system in the average architect's office, wholesale prices are available to the retail consumer. The manufacturer claims fairly that in any industry this condition is not sound. The reason that the architect does not usually retain discounts is because he feels that for his services in interior decorating he can charge on a percentage or hourly basis only and that he cannot be placed in the position of a contractor, or take payment from two parties in the transaction. Consequently, with the stopping by many furniture and decorative material houses of the practice of giving equal discounts to the architect, the interior decorator is placed in a position where he can offer his services at lower cost to the client than can the architect. The possibility of meeting this situation will be discussed in later paragraphs.

Meanwhile it is interesting to note that the large volume of furnishing and decorating now controlled by architects is being handled in various ways:

(1) The architect employs an interior decorator in the role of a professional buyer to carry out detail work of selection of materials and furniture. The architect controls the principal elements of design; the client pays the retail prices so as to provide the decorator's profit. The architect is paid by receiving a commission approximating 10 per cent on total cost or by remuneration on an hourly basis.

(2) The architect is called upon in consultation on the work of an interior decorator who is dealing directly with the client, for which he receives a service fee.

(3) The architect maintains an interior decorating department which takes advantage of all discounts in lieu of commissions.

(4) The architect purchases at the best possible prices, including all available discounts, and bills his client exactly at cost, receiving a commission on the work. In this manner he takes advantage of those distributing organizations which are still willing to allow him full discounts.

It was found in the course of this investigation that furnishing and decoration in all types of buildings were almost without exception controlled directly by architects and that many architectural firms contract for the complete design and supervision of a project, including all furniture and decorations. The volume of this business controlled by architects will be discussed in later paragraphs under comments on the Manufacturer and Dealer aspect.

What the Interior Decorator Thinks and Does

Interior decoration carries with it all the attributes of a profession, a trade, a contracting activity and a buying service. This branch of the building field includes many earnest workers of varying degrees of ability and in practice there seem to be approximately three classes of interior decorators:

(1) The professional interior decorator, highly skilled in design and general knowledge of the subject, and capable of carrying out intricate projects involving the expenditure of large sums of money.

(2) What we deem the "merchant class" of interior decorators, dealing principally in antiques and unusual furniture and fabrics and often maintaining shops. An interior decorator of this class does not as a rule work on any standard retail price basis but buys wherever possible at the lowest prices and sells wherever possible at the highest prices. Here many unfortunate practices have developed and it is due to the questionable and sometimes directly dishonest policy of some members of this class of decorators that many charges are unfairly lodged against the entire fraternity of interior decorators.

(3) A third class of interior decorators might well be termed "professional shoppers." Individuals

in this class have of course developed a certain knowledge of color, texture and design. This is the type which usually works with the architect on smaller projects, purchasing through the wholesale decorators' trade and selling at the retail price. A decorator of this type has a number of valuable assets in actual practice, including a quite complete knowledge of the market covering available furniture and materials. This type of decorator is usually called to work under the direction of the architect and to combine with the architect's broad knowledge of design an intimate knowledge of detail in fabrics, colors and furniture. Apparently there are no standard qualifications necessary to become a decorator and consequently to be favored by the wholesale trade.

We find that among the ranks of interior decorators there are many individuals of recognized ability who are in every sense professional, but as we pass down the scale we find within the ranks graduate house painters, curtain makers, furniture salesmen, and of course many who consider their activity more or less as an avocation.

It is not necessary to discuss the fact that there is much dissension in the ranks of this fraternity, as well as a strong feeling on the part of many against the handling of furniture and decoration by architects. Similarly, there exists among the architects a strong feeling against certain classes of interior decorators, particularly those who are called in without consideration for the architect and who make suggestions not only out of keeping with the design as the architect has visualized it, but often involving interior structural changes entirely contrary to the spirit of the design as it has been developed by the architect.

We realize, of course, that in treading this maze of interior decoration we must touch some dangerous spots and some sore ones, but we realize also that as the interests of architects in this field are growing rapidly it is necessary to develop a clearer mutual understanding—at least between the architectural profession and the wholesale decorators' trade, if not between architects and the entire decorating fraternity. We can visualize very definitely certain standardized methods which will give satisfactory results to all who are following their business in a logical manner and it is hoped that some of these points will be clearly developed through this and later articles.

Facts About and For the Manufacturer and Dealer

Having in a general manner pictured conditions relating to interior decoration in the architectural profession and the interior decorating fraternity, it is necessary to give consideration to the viewpoint of the manufacturer and dealer and perhaps to bring to their attention facts as yet only dimly realized.

It is indeed a coincidence of unusual interest that as this article is being written there comes to our attention the December, 1920, issue of *Good Furniture*, a well known manufacturer and dealer periodical. In order to show the exact editorial policy of this publication regarding the subject under consideration we quote from one of the advertisements of *Good Furniture:*

"We especially appreciate our position as a recognized medium of information between manufacturer and dealer during this evolutionary period. The signs of the times, the unfoldment of the greater purpose for 1921, can be clearly seen from cover to cover in this issue."

In the copy of *Good Furniture* mentioned we find an interesting section which has been running for some months under the general heading "Upbuilding a Great Industry," and we note that Chapter 7 is headed "The Kinship of Architecture and Furniture." Reading through the article there are to be found several significant paragraphs from which we quote:

"What is the matter with the architect? Does he consider that he has done his full duty to himself and his client when he plans a fine building suited to grounds and environment? Is he merely an engineer, an expert on proportions, stains, form and superficial coloring? Does he stop with supervision of construction because his profession is so lofty that he is above consideration of the home in its finished state? Why does he not finish what he has started, and suggest the colors of walls and ceilings, the kinds of rugs and pictures and the types of furniture that should go into the structure his brain has developed?

"It seems clear enough that the architect, who is a student of periods and styles of all ages, owes it to art and posterity as well as to the present generation, to apply his knowledge to perfection of interior as well as exterior.

"There seems little enough reason why the architectural profession should hold itself aloof from the problems of interior decoration, or consider itself above such work. You would think little of a surgeon who performed a difficult operation and then ignored the subsequent welfare of the patient.

"People who are able to *pay* are not always capable of discrimination. This is particularly true in the selection of home plenishings. Very often one sees the most deplorable taste exhibited in furnishing a new home, a splendid hotel or a public building.

"Buyers who seek the advice of trained decorators avoid this fault; but there are those almost without number who buy without professional aid, and having no real conception of actual fitness, make a sad fiasco of their selections when these are finally placed."

These are indeed interesting and constructive suggestions, particularly as they emanate from channels advisory to the manufacturer and dealer. In turn we may state that the results of our investigation in the architectural field show that the purchase of millions of dollars' worth of furniture

and decorative materials is controlled directly today through the offices of thousands of architects and that interest is growing in this subject to a point where such co-operation as that suggested in the quoted paragraphs is indeed necessary.

Recognizing the architectural profession as a definite and powerful buying unit, constantly increasing in its control of expenditure in this field, it is evident that the wholesale decorators' trade backed by the manufacturers should now give serious consideration to the creation of a more equitable and friendly relationship with the architectural profession.

It must be realized that architects will work in one of three ways:—first, directly controlling all design and purchase; second, utilizing the professional buyer class of interior decorators to carry out detail purchases; third, in some cases, recommending the employment of high class professional decorators to co-operate in the solution of special problems.

It is evident that in this field the architect is to be limited only by his own ability and experience and that he will seek the services of interior decorators only in proportion to the difficulty of the problem and to the amount of knowledge which he may possess on the subject. We do not claim that all architects are fully equipped by experience or knowledge to handle the problems arising in this connection. Is it not logical to believe, however, that the average architect even without special training is more capable of rendering service to this end than the average interior decorator?

We have endeavored to give a fairly comprehensive outline of present conditions in this field, particularly as affected by activities of the architectural profession. The letters which we have received in the course of this investigation show a marked interest, not only in receiving all possible information on the subject, but in encouraging some activity which will bring about standardized conditions in this field.

While we have formed certain fairly definite conclusions regarding the possible relationship of the architect to the manufacturer and the interior decorator, together with suggestions regarding dealings between the client and the architect in the matter of furnishing and decoration, we shall withhold these suggestions as the subject of an article to be published in the February or March issue of THE FORUM. By readers who have not already expressed their opinions it is hoped that suggestions will be made freely and frankly in order that all opinions may be correlated and some definite action taken to bring about better understanding and better practice.

Dining Room of House in New Haven, Conn.
Ewing & Chappell, Architects

MINOR ARCHITECTURE
EXEMPLIFIED IN MODERATE COST BUILDINGS

A Country House Alteration

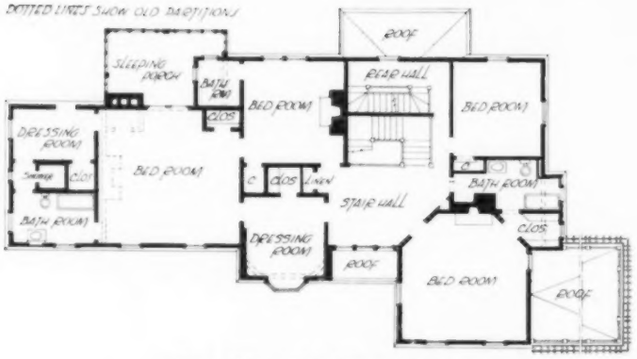
LUCIAN E. SMITH, ARCHITECT

SOME of the most interesting work being done today consists in the remodeling and adapting to modern conditions of old city or country residences. With all of its defects in the way of design and its shortcomings in planning building a generation ago was apt to be well done. It was before the era when prices for materials of every sort had soared to such figures that substitutions of various kinds were resorted to, and builders of that period worked with the idea of producing structures which would endure. With a building structurally sound and well built to begin with alterations are frequently well worth while, often resulting in improvement out of all proportion to the cost involved.

Entrance Front of Original House

The illustrations show the original appearance of a house on Llewellyn road, Montclair, N. J., built about 40 years ago, and its greatly changed exterior after being successfully altered by Lucian E. Smith, architect. In this instance much of the entirely transformed appearance of the building is the result of removing an unnecessarily large veranda and considerable

Entrance Front Showing Alteration of House



Plan of Remodeled Second Floor

Plan of Remodeled First Floor

green and brown laid irregularly. The chimneys are whitewashed.

The interior alterations consisted chiefly in the removal of various partitions to correct the proportions of certain rooms, the addition of several bathrooms and the enlarging of the living room which, in its altered form, is 20 x 32, paneled with wood from floor to the ceiling of slightly roughened plaster, having incised ornament. The living room has a stone chimney piece and the casement windows are filled with leaded glass having silhouettes of grotesque animals and birds.

The plan of the house which has remained practically unchanged is interesting in the spaciousness it shows in contrast to modern planning, where the architect is forced through conditions of cost to economize in area and cubage. There is, therefore, a definite advantage to-day for the client in solving his problem of a modern house in following this method of procedure. The increased value of the house greatly exceeds the cost of improvements and in cases where the location is desirable it can later be sold at a profit when new construction is contemplated. Considerable skill is required for planning successful alterations and their results often prove their importance.

superfluous ornament, the correcting of the most glaring architectural faults of the clapboarded house and the coating of the entire exterior with rough coated stucco applied on metal lath. The use, to a moderate extent, of trim to simulate half timber in an instance of this kind would seem to be quite justifiable since it is obviously employed merely as decoration or ornament and makes no pretense of being anything else.

The exterior has gained a certain unity of expression by the placing of the windows in groups and by the use of casements which are especially suited to a house of this kind. An added character is given by the use of brick for steps and for the floors of terrace and veranda. All the exterior woodwork has been stained and the roof is covered with shingles of

Extended End of House Showing New Porches

An Efficient School of Economical Type

McLAUGHLIN & BURR, ARCHITECTS

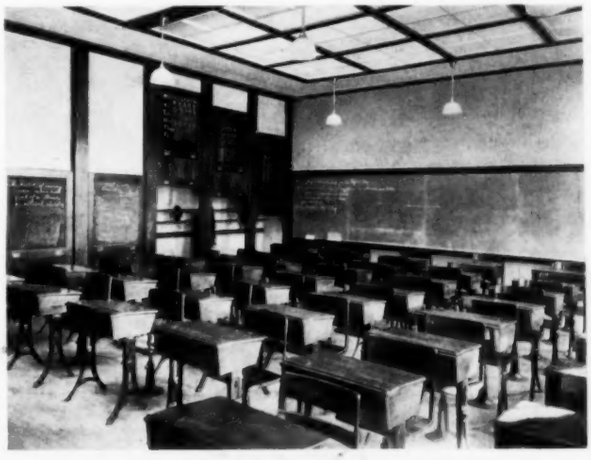
By G. HOUSTON BURR

THE erection of houses at Quincy, Massachusetts, to accommodate 450 families soon brought before the school authorities the problem of how the children of these families were to be accommodated in schools that were already crowded. This condition was met by the United States Housing Corporation agreeing to erect an elementary school which would eventually become the property of the city.

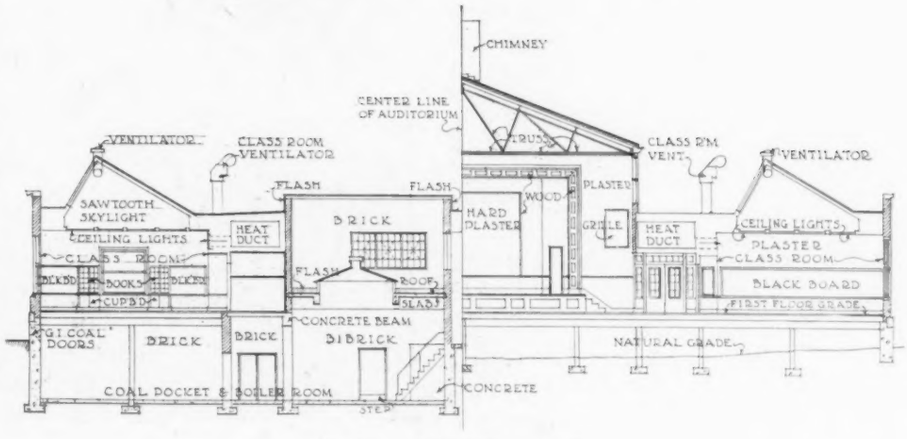
The requirements of the school were left to the local authorities with final decision as to construction and architectural treatment vested in the architectural department of the Corporation. It was decided that a building of 18 classrooms would accommodate the additional pupils in the district where the government houses had been erected and that the building should be a one-story school with the classrooms lighted by overhead light. Two of the rooms were to be fresh air rooms and one a domestic science room. In addition, the building was to contain an assembly hall to seat about 600 and a small library, both of which could be used for community purposes, administrative offices, toilet rooms and teachers' room.

The Quincy school authorities had visited a one-story school in the western part of the state lighted by overhead light and were very enthusiastic about this method of lighting, but in this school the classrooms were without side wall windows and the architects raised the question as to the psychological effect on pupils being shut up all day within four walls with only overhead light. In order to get further information on the subject several cities where one-story schools are being constructed were visited, and the information obtained from this visit was very instructive.

Everywhere the school authorities were agreed that it was very essential to have at least some side wall light in order that pupils might relieve the monotony by being able to look out of the windows. In one city it was felt that the psychology of this was important enough to discard the unquestioned merit of overhead lighting and to light the rooms entirely from the side walls. After considerable study it was finally decided to light the rooms with saw-tooth skylights facing the north and with fairly large windows in the side walls. This solution proved very satisfactory and the classrooms have excellent light even on dark days Study of the plan soon developed that 12 classrooms naturally grouped themselves around the assembly hall and boiler room portion, thus leaving six rooms to be accommodated elsewhere. The first thought would be to arrange the six rooms either by extending the building to the rear or on each side of the front so as to make a symmetrical front elevation. The first plan was impossible because the lot was too shallow and the second was hardly feasible by reason of the natural conditions of the lot which, although fairly level, had an outcropping of ledge at the interior angle. Therefore to save expense the building was designed with five classrooms on one side, making an L shaped plan, and the center



Typical Classroom



Section on "B-B" Shown in Plan

Floor Plan and Upper Part of Auditorium with Adjacent Rooms

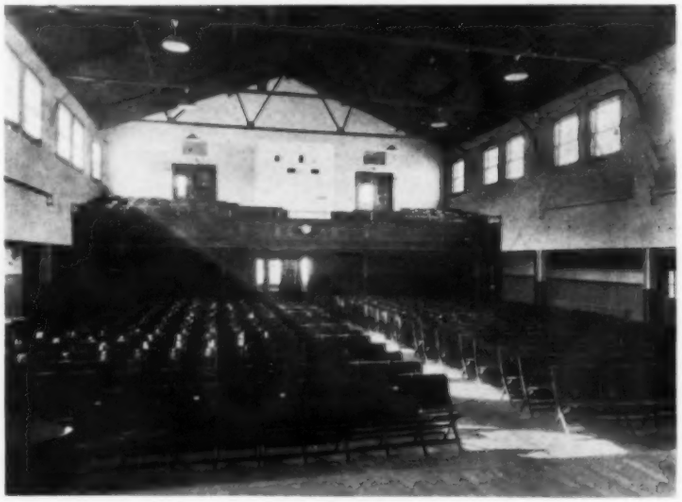
portion of the front of the main building was carried up two stories to accommodate the domestic science classroom and a teachers' room with a small kitchenette. This kitchenette was added because it was found that the majority of the teachers came considerable distance to school and did not return home for the luncheon hour. Therefore some arrangement was made so that they could prepare their own lunches in the school.

Each classroom is arranged for 42 pupils and has sliding blackboards and bookcases at the teacher's end and Chicago type wardrobes along the corridor side. The rooms are heated by direct radiation controlled by automatic thermostats and are supplied with fresh air through ducts carried above the ceilings of the corridors from a central fan system; the classrooms ventilate under the sliding doors of the wardrobes causing a constant current of air to pass up through the clothes and they are quickly dried in wet weather and without odor in the classroom. Foot warmers are placed at convenient points and unlike the usual type, these are raised to form a platform.

Every classroom has an emergency exit opening directly outdoors so that in case of fire no pupil is sent back into the building. The floors of the classroom are of maple, but the floors of the corridor and assembly hall are of rubber tile about ¼ inch thick and 18 x 24 cemented to the underfloor. This makes a very excellent surface as it is practically noiseless. The assembly hall is equipped with a fair sized stage and moving picture machine booth.

When working drawings were started on this school definite instructions were given the architects that every item must be fully covered in the plans and specifications and that on no account could there be any extras. In this connection it may be interesting to know that not only was the building erected without any extras, but at the completion of the work an allowance of $24 was returned to the Corporation due to not having used all the amount allowed for temporary heating. The school was erected in 1919 at a total cost of approximately 31 cents per cubic foot, or about $275 per pupil, including grading and landscape work.

Experience in every type of schoolhouse construction has convinced the architects that the one-story school is the most economical type to erect in localities where land is inexpensive. The safety of having every classroom exit directly to the outside in case of fire makes this type of school superior to a two-story building, even if it is of fireproof construction. A building of this kind makes for simplicity in school administration and with proper study can be made very pleasing architecturally. Overhead light is the very best means of lighting classrooms but more costly roof work makes a school so lighted slightly more expensive.



Auditorium from the Stage

VIEW OF MAIN ENTRANCE

ELEMENTARY SCHOOL FOR U. S. HOUSING CORPORATION, QUINCY, MASS.

McLAUGHLIN & BURR, ARCHITECTS

GENERAL VIEW

FRESH AIR CLASS ROOMS

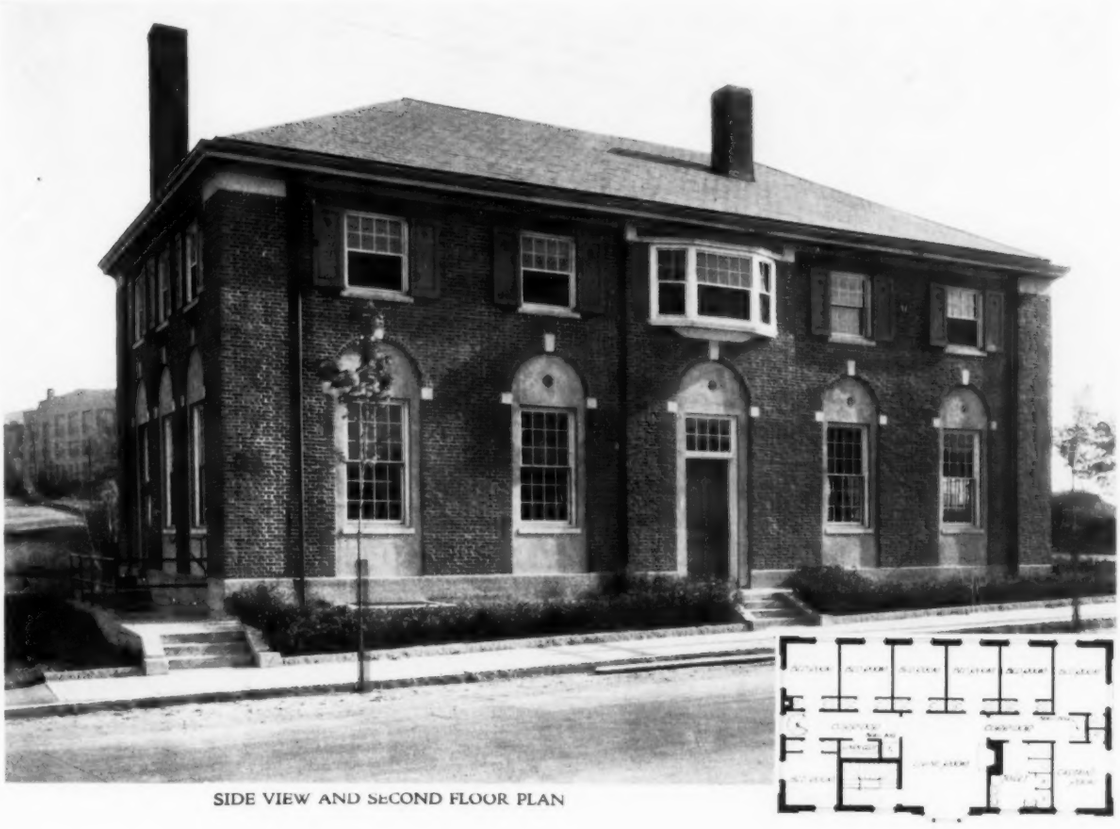
ELEMENTARY SCHOOL FOR U. S. HOUSING CORPORATION, QUINCY, MASS.

McLAUGHLIN & BURR, ARCHITECTS

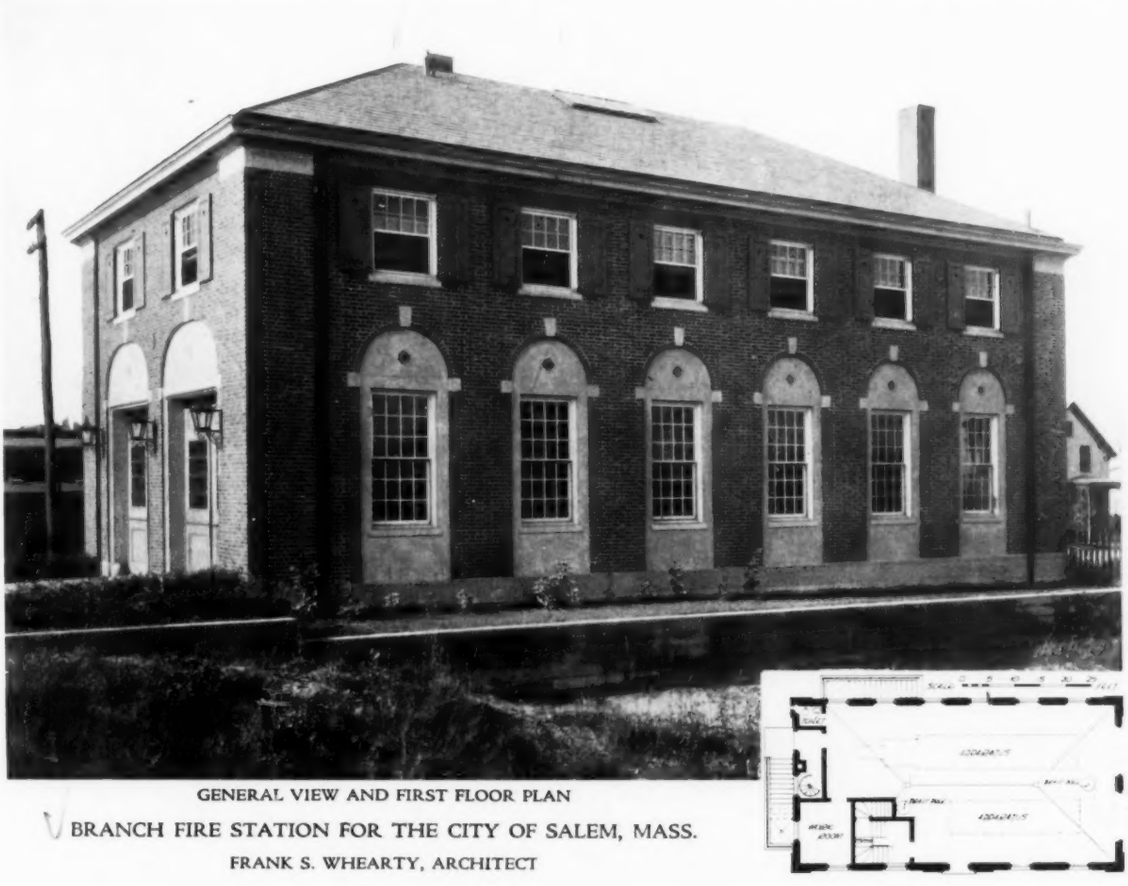
GENERAL VIEW AND FLOOR PLAN

OFFICE BUILDING OF THE NEW ENGLAND POWER CO., WORCESTER, MASS.

JOHN BARNARD, ARCHITECT



SIDE VIEW AND SECOND FLOOR PLAN

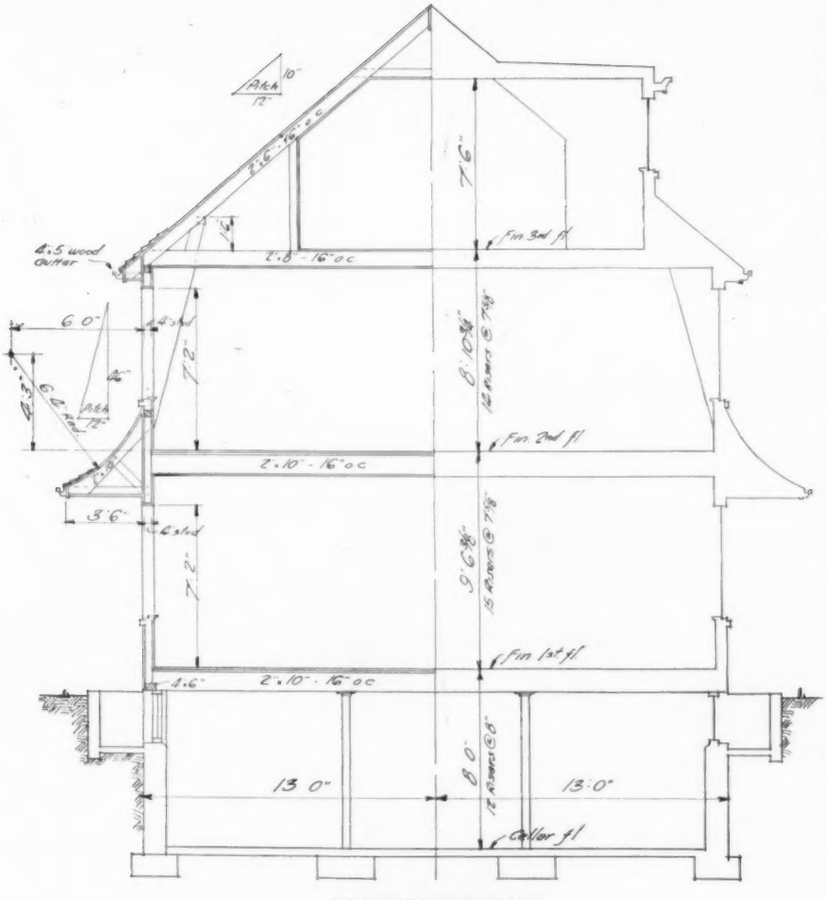


GENERAL VIEW AND FIRST FLOOR PLAN

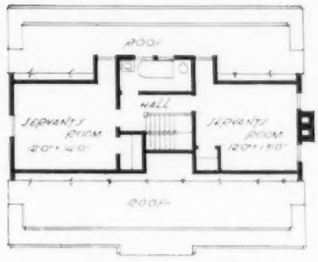
BRANCH FIRE STATION FOR THE CITY OF SALEM, MASS.

FRANK S. WHEARTY, ARCHITECT

GENERAL VIEW

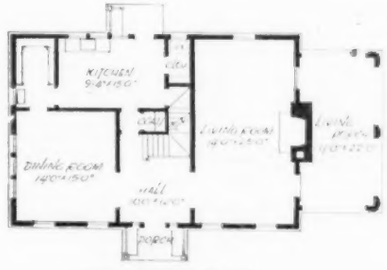


TRANSVERSE SECTION



THIRD FLOOR PLAN

SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE OF PHILIP P. BARBER, ESQ., TENAFLY, N. J.

R. C. HUNTER & BRO., ARCHITECTS

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

A Large Concrete Warehouse

By R. E. BRIGHAM

INTEREST in bigness has been called a purely American, modern characteristic. Our largest shows on earth and our colossal buildings have been pointed out as showing that we are interested in quantity sometimes at the expense of quality. However, it is doubtful whether this interest in the largeness of things is either purely American or purely modern. One can easily understand the competition between the builders of early ages who vied with each other in the erection of larger and larger cathedrals and other monuments. Certainly there was nothing modest with regard to the design and construction of St. Peter's and the Emperor Justinian, who was responsible for the erection of Saint Sophia, did not feel that he was building a small or insignificant structure.

There is no doubt but that everyone is and always has been interested in large buildings. It is also true that in most cases where buildings have been erected covering large areas, or extending high above the sky line, they have been well designed from an architectural point of view. Both the Municipal Building and the Woolworth Building in New York are tremendous structures, and both are considered as having distinct architectural merit which has attracted wide attention.

A building totally different in character, but of large size considering its use, is now being constructed in lower New York; this building is known as the 395 Hudson St. Building. It will be used largely for a warehouse but there is a section which will be given over to use as a garage, and certain

The 395 Hudson Street Building, New York
McKenzie, Voorhees & Gmelin, Architects

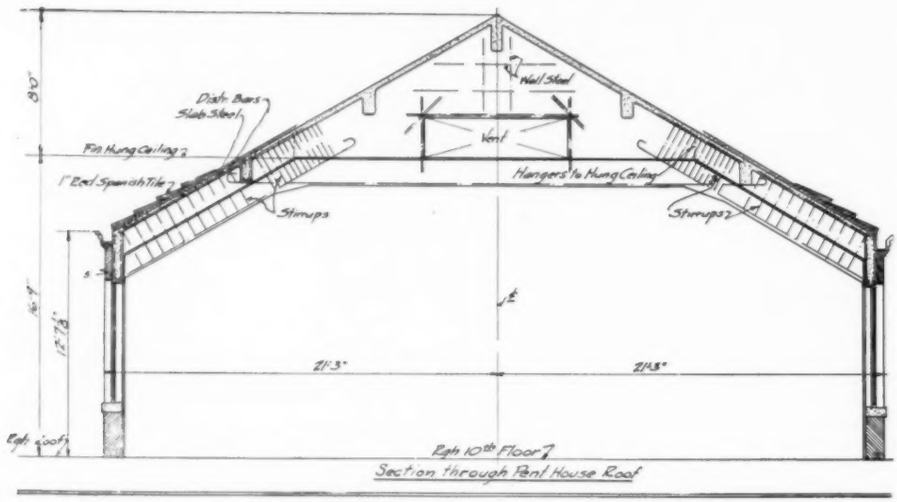


Fig. 1. Section through Pent House Roof

floors will be used entirely for shop purposes and others for offices. The building will cover an entire city block. Its longest dimension will be 339 feet, 9½ inches and it is approximately 200 feet wide. It will be a ten-story building with a basement and with large pent houses accommodating machinery, tanks and other apparatus.

The design of a warehouse presents great difficulties to architects. The firm of McKenzie, Voorhees & Gmelin, who were commissioned to design this building, have confined their efforts to the work of creating symmetry of design and the proper scale of mouldings and cornices. They have approached the problem from a standpoint of maintaining harmonious proportions and they feel that this can be done in a warehouse as well as in any other structure.

The warehouse is after all nothing but a huge box with the walls pierced with as many and as large windows as possible. This presents a checker board pattern on the exterior which is difficult to deal with no matter how it is approached. By careful studying of mouldings, and proportions and positions of band courses, the architects have attained an extremely pleasing appearance for this type of building. They have also done away with the ugly tanks and other roof structures which have so badly marred the skyline of New York, treating the pent houses in such a manner as to make them integral parts of the building and making the design mass up in an interesting manner.

Planning for a building of this kind is influenced to a much greater extent by the requirements of a labor law than by the dictates of the Ecole des Beaux Arts. No wide means of circulation, no accentuated axis dominates the plans. The placing of stairways is determined by the distances to them from points in the building and the locations of elevators are determined by their nearness to the loading and shipping platforms, or to the entrance hallways.

Only on the ninth floor where the offices are located is an attempt made to maintain corridors giving an easy access to all parts of the building, and this is effected by the elimination of certain columns on this floor. On the tenth floor, which might be looked upon as the first floor of the huge pent house (See Fig. 1), will be located the large dining room and kitchen, the rest room for women employes, a conference room and a demonstration room. This plan will cover a fairly large number of square feet, but there will still be left a large area of roof which will be used for recreation purposes. At present it has not been decided whether this roof area will be used for hand ball courts or bowling alleys, but it is certain that recreational features will be added.

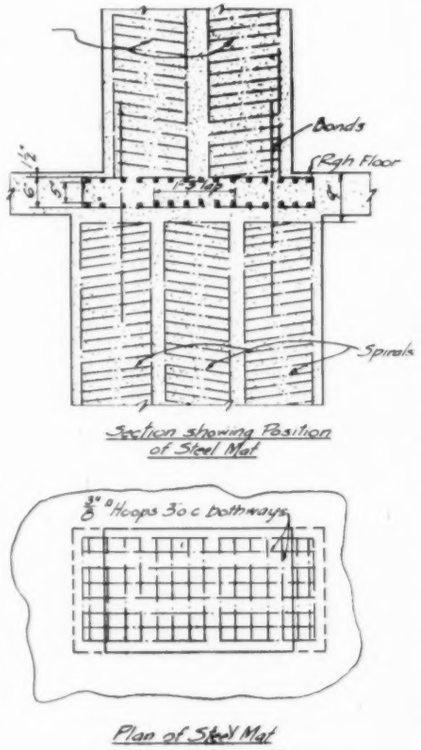


Fig. 2. Transition of Columns

However, the chief interest in a building of this type lies in its construction. This structure will be, when completed, the largest reinforced concrete building in the Borough of Manhattan, and perhaps one of the largest commercial buildings built of this material anywhere in New York. The type of construction that will be used is flat slab construction with no beams showing in the ceilings except in certain portions where beams will not be objectionable. Flat slab construction is known more outside of New York than it is within the limits of the metropolis; in fact, until recently no provision had been made for this type of structure by the building department, and it was not until a special ruling had been adopted on July 8, 1920, by the Board

of Standards and Appeals that the engineers' designs for the building could be approved.

In most cases the Chicago Code has been used by engineers designing work of this character. In this building the engineers have had a chance to show the flexibility of concrete construction. Much of the criticism which has been directed against concrete work has been on account of the fact that it was supposed to be limited in its scope and inflexible.

In this particular instance the engineers have shown that a large degree of flexibility can be developed in reinforced concrete structures. As an example of a case of this kind, it might be noted that on two sides there are wagon courts into which trucks will be driven to deliver and receive goods from receiving and loading platforms. It is naturally desirable to have wagon courts as wide as possible and yet in these there must be columns carrying the structure above. In the past it has always been felt that reinforced concrete columns in a building over ten stories high must be of colossal diameters. Such columns would be absolutely out of place in wagon courts.

The engineers have surmounted this difficulty by designing the sections of columns which will appear in the wagon courts as having rectangular sections which change from rectangular to round at the second floor. In some cases a change in section is effected so that instead of having the long dimensions perpendicular to the building line, as in the wagon courts, these are parallel with the street front. This is done so that columns do not project excessively into the second floor but are flat along the wall.

The method used in effecting the change from rectangular to round columns is almost unknown to any but concrete engineers. Use is made of reinforced concrete mats (See Fig. 2) which are large rectangular slabs of concrete reinforced by means of ⅜-inch round rods looped at right angles to each other and spaced approximately three inches on centers in both directions. The mats are practically all steel filled in with concrete. These are placed on top of the rectangular columns, in much the same manner as butt plates are used between sections of steel columns, and the round column is carried on top. Another unusual feature is the use made of columns having oblong sections at elevator shafts. It is desirable to save as much room in the elevator shafts as possible and it would be difficult to bring the partitions of the elevator shafts against circular columns and for this reason these columns have rectangular sections and except on the top floors are much longer in one direction than in the other.

The simple method of constructing most of the columns throughout the building is that in which spirals of steel and vertical rods are used to reinforce the concrete in the column (See Fig. 2). The method of reinforcing the columns at the elevator shafts is that in which two and sometimes three

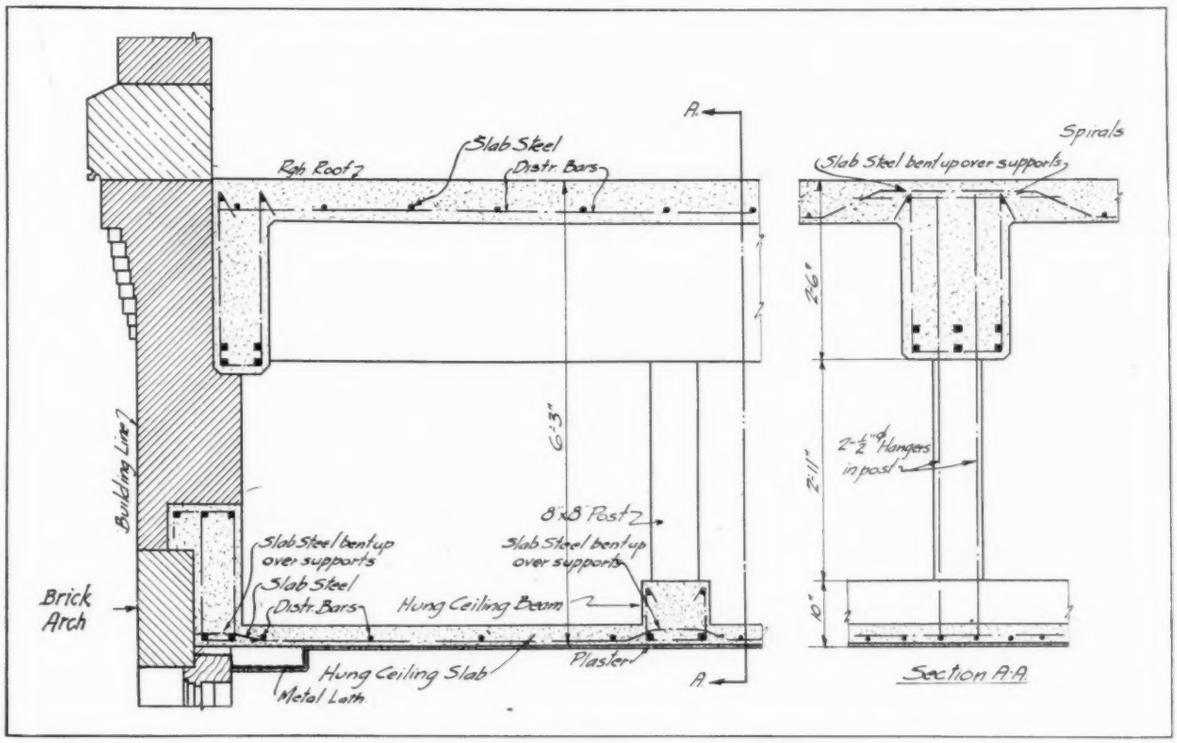


Fig. 3. Section through Hung Ceiling

spirals are used in the reinforcing, and all spirals are then encased inside the rectangular concrete. As the columns reach the upper stories of the building they decrease in size, naturally, and where three spirals were used at the basement and first floors only one spiral is used at the eighth and ninth floors. The changes from the large to the small columns are effected in the same manner as the changes from rectangular to circular columns, that is by means of mats placed between the large and the small sections.

Another interesting detail is the design of a portion of the first floor. In this portion there will be located racks in which will be stored electric conduits and owing to the heavy load of these conduits the floor is designed for a live load of 1,000 pounds per square foot. This floor is supported by means of girders and beams and not by means of the flat slab construction which is characteristic of the rest of the building. Except for the fact that the beams and girders are all designed deeper and wider than those found in other places in the building where this type of construction is used, no special difficulty has been encountered by the engineers.

Footing problems were not particularly difficult as the soil encountered was unusually good. When the excavation was made for a certain section of the basement, however, it was found that the good soil which had been found in the test borings did not extend over the entire area so in this portion the footings were designed to impose a load of three tons per square foot upon the soil, whereas the majority of the footings were designed to impose a load of four tons per square foot. All footings under the interior columns are rectangular, pyramided, reinforced, concrete footings. Under the outside walls the footings are made to be continuous in almost all cases but at one corner a footing was designed in such a manner as to take a load of four columns—one corner, two wall columns and one interior column.

On the ninth floor, which will be used for office purposes, intermediate columns are left out and spans of 40 feet are encountered which must be taken care of by reinforced concrete girders. In order to avoid having these large girders drop down below the ceiling of the ninth floor, a hung ceiling is used which is constructed of light reinforced concrete of sufficient strength so that a small live load can be imposed upon it (See Fig. 3). In this hung ceiling space are distributed the heating mains and the heating supply pipes drop from this space to the basement and return in the basement to the boiler. The hung ceiling space is also used for the distribution of ducts into which are gathered the ventilating ducts from the toilet rooms and shop floors. The use of a hung ceiling of a building of this type is somewhat unusual.

The structural drawings show the concrete construction of the hung ceiling space over the ninth floor, the steel and concrete mats used between sections of columns and the type of roof construction in the pent house roofs.

It might be noted that in this building unusual care has been taken to install first class mechanical equipment. The sprinkler system is very complete. It is supplied by two sources of water supply and in addition there is a fire pump installed capable of delivering 1,000 gallons per minute at the top floor to the sprinkler and standpipe system. This water is lifted to a height of over 151 feet and is delivered at a pressure of 100 pounds per square inch. The sprinkler system will be divided into six systems each fed by an independent riser. In addition there will be dry lines in both wagon courts and these dry lines will be equipped with an accelerator which will enable water to flow to any particular head in the dry system almost as soon as the head opens up.

The heating system for this building is of a type usually found in the better class of office buildings. It is a vacuum system with overhead mains. The theory of the overhead main is that the steam and water of condensation both flow in the same direction, and this does away with water hammer. All branches are taken off above the floor and all radiators are of wall pattern making it possible to clean around them. The plumbing installation will be of a very high standard and all fixtures are hung from the wall in order to secure the highest degree of sanitation and cleanliness.

There will be ice water lines to the drinking fountains on all floors. A small refrigerating plant will be used. The entire system will be equipped with galvanized wrought iron pipe. There will be two compressed air lines to the shop floors, one having a pressure of 65 pounds and the other a pressure of two pounds.

It would seem that this is an unusual building considering the purposes for which it is designed. By reason of its size and also on account of its careful architectural treatment, it is to be classed above the average warehouse. Because of the great care given to the mechanical equipment, the plumbing, heating and electrical work, it will be of the most carefully designed type, and the building will be one of the most complete erected for shop as well as warehouse and commercial purposes in Manhattan.

The building is unusual also as illustrating the possibilities of securing good design in a building which is often neglected and with a material which is seldom used to such advantage. In designing structures to be built of concrete emphasis may well be placed on the note of strength and the building yet be given an appearance of architectural symmetry and dignity.

Truss Design and Details

PART III. HEAVY WOODEN TRUSSES WITH PARALLEL CHORDS

By CHARLES L. SHEDD, C.E.

WOODEN trusses with parallel chords are frequently used in building for long spans and heavy loads. It is more common to use such trusses in railroad bridges of second class roads but the use of them should be understood by one engaged in building work as the principles are fundamental and the knowledge of them will enable the designer to take care of cases where their use is imperative.

In Fig. 10 is shown a wooden truss with parallel chords. The slope of the diagonals should be in the neighborhood of 45° but this may be varied considerably in case of emergency. If they are flatter it makes the horizontal component greater causing the use of greater lugs in the castings or of deeper notches where no casting is used. Besides this a flat diagonal is longer and the additional length might prevent the use of a smaller and more economical piece on account of the possibility of

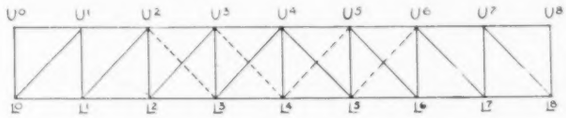


Fig. 10

buckling. The increase in the size of the lugs is the most serious trouble as it causes the waste of more wood in the bottom chord and increases the trouble due to shear as will be described hereafter in dealing with Fig. 13. If the diagonals are made steeper than 45° no serious difficulties are encountered, but the economy may not be as great.

The panel points should also be located with reference to the loads to be applied. These loads should be as near as possible to the panel points. When the load is practically uniformly distributed the panels should be short. Any loading applied to the chords between the panel points causes bending in the chord which increases its required size. A conventional way of marking the panel points is shown in Fig. 10—U^0, U^1, U^2, etc., for the upper chord panel points and L^0, L^1, L^2, etc., for the lower panel points. The members are then denoted by the panel points at their ends; thus the end diagonal is known as L^0, U^1, etc.

The diagonals are of wood and are designed to take compression only as they simply butt at their ends. The verticals are of wrought iron or steel rods and are designed to take tension only as they are too slender to resist buckling and are connected to the truss only by nuts and plates on the outer side of the chords.

If the load on the truss were greater on one end than on the other (as would be the case with a snow load on one side of a roof) the stresses in the diagonals near the center and also in the verticals would be likely to be reversed in character. This would cause the opening up of the joints and bending in the chords resulting in trouble of a serious nature. To avoid this, wooden diagonals are added as shown by the dotted lines in Fig. 10. These are called counters and in the case of unsymmetrical loading a counter would be doing the work instead of the diagonal in the opposite direction. In trusses with broad chords the main diagonals may be made of two wooden sticks and the counter may be placed between them. If the width of the truss will not allow this treatment the counter may be made in two pieces butting against the main diagonal. If the diagonals are at 45° the counter will butt squarely against the diagonal, and they need only be spiked together at this point, but if the counter and the diagonal intersect at an angle other than 90° the counter would have a tendency to slip along the diagonal and thus nullify its effect. This, however, can be overcome by notching the counter slightly into the diagonal, the depth of the cut depending on the angle and the amount of stress which it is possible for the counter to carry. A notch of less than one inch is not very reliable although $\frac{3}{4}$ inch is used by some designers. When the counter passes between the two members of the main diagonal a small bolt of $\frac{1}{2}$- or $\frac{3}{4}$-inch diameter is generally used, passing through all three sticks.

The joint at L^1 or L^2 may be designed as shown in Fig. 11. Here a casting is used to transfer the stress

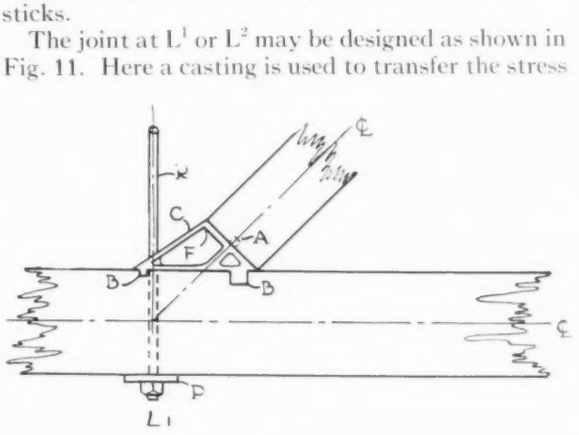


Fig. 11

from the diagonal into the rest of the truss. The ribs, such as C, should not be less than $\frac{3}{4}$ inch in thickness as the forms used in casting may float a little which might seriously lessen their thickness. In castings, even with $\frac{3}{4}$-inch ribs, the moulds should be so placed that the openings in the casting will be vertical to minimize this floating. At the intersection of the ribs a slight curve called a fillet of about $\frac{1}{2}$-inch radius is used to strengthen the

point and facilitate the casting. A small round projection may be placed at A to project into the diagonal about an inch to keep it from slipping. Some designers prefer to leave a hole in the casting here and insert a short rod. This latter scheme makes the erection somewhat easier.

To keep the casting from slipping along the chord, lugs B are formed, their combined depth being proportional to the horizontal component of the stress in the diagonal. Two are often used to lessen the depth of the cut in the chord which in the case

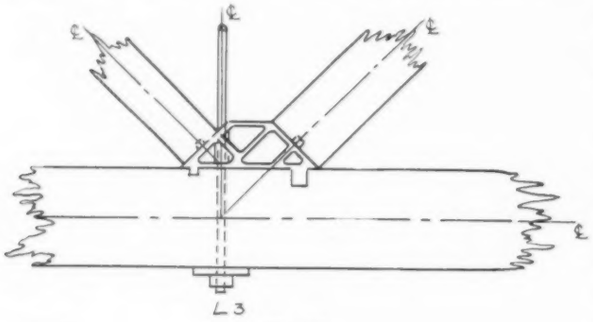


Fig. 12

of the tension chord means just so much larger stick. These lugs should fit tightly into the stick and be reasonably smooth and straight to insure a firm joint. Their thickness should about equal their depth. One of them is made smaller than the other, usually not more than one inch, as its efficiency is limited by the horizontal distance between the lugs. This must be long enough to transfer in shear the portion of the stress transferred in bearing by the larger lug above the bottom of the smaller to the main, unbroken portion of the chord. The lugs are placed a short distance from the ends of the casting to make the ribs in the corners less liable to fail. Failure at this point in poorly designed castings is not at all uncommon. The rods R in the case shown pierce the casting and are held at the ends by a plate P bearing against the chord. Where the rod pierces the casting a thin sleeve is cast about the hole and rod to strengthen this point.

The joint at L^3 is shown in Fig. 12. It should be noticed that while the center lines of chord and vertical and the main diagonal intersect at a point that the center line of the counter does not intersect at this same point. This is done to avoid the use of too large a casting and as the stress in the counter can only be small this eccentricity will not be serious. This point was mentioned in the first article of this series in the November number of THE FORUM.

The joint at L^0 is shown in Fig. 13. The vertical stick at the end transfers any load which may be applied at the end of the truss to the bearing and it, together with the vertical rods, binds the two chords together making a firm structure. The vertical rods are frequently countersunk into the lower chord so as not to interfere with the bearing. The plate at the end of these rods does not need to be very large. It is at this joint that the most difficult problem in the design of the truss is often encountered. This is the problem of taking care of the shear in the lower chord due to the horizontal component of the stress in the end diagonal. The end diagonal carries the greatest stress of any of the diagonals and it meets the lower chord so near its end that frequently little space is available to take care of this shear if no other provision is made than at the other joints. The distance D, Fig. 13, should be at least 12 times the combined required depth of the lugs otherwise the upper part of the lower chord would shear off from the right hand lug to the end of the truss.

If there is room to extend the lower chord to provide for this it is the most economical way of designing the joint, but where space does not permit, some other means has to be provided. One way is to omit the lugs on the casting and to place under the casting a steel plate with a lug riveted to its top for the casting to bear against and extend the plate back far enough so that other lugs may be put on its under side, notching into the lower chord. When this is done bolts should be placed through the plate and passing through the chord. These bolts should be just to the right of the lugs to prevent the plate from buckling up.

Another way of providing for this shear is to design the casting as shown in Fig. 13 and then run a bent plate around the end of the lower chord

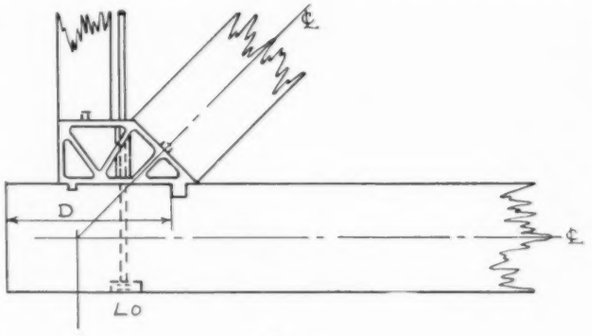


Fig. 13

and along either vertical face of it far enough back to allow vertical lugs to be placed on the plate engaging the bottom chord in a similar way to the top plate already described.

In some trusses it has been found that the chord stress was so great that wood could not be conveniently used for the lower chord which is in tension. In such cases a stick is chosen large enough to take care of the details properly and plates run along the vertical faces of the stick for the entire length being merely a continuation of those described in the preceding paragraph. Channels may be used to advantage instead of plates and sometimes rods have been used passing through angles at their ends, these angles having their outstanding legs reinforced by stiffener angles.

BUSINESS & FINANCE

C. Stanley Taylor, *Associate Editor*

Business Elements in an Architect's Office

ALMOST invariably the preface of anything written on the subject of business from an architect's viewpoint consists of a sweeping apology to art, followed by the more or less thinly disguised accusation that the average architect is an artist and consequently a helpless entity in the business world. Even where groups of architects meet there is no lack of disparaging criticism as to the average architect's ability to make money, to hold his clients, to manage his organization and to take his logical position in the economic structure of the community.

So much has been said, in fact, that there is no need of additional criticism. We believe that every progressive architect possesses the spirit of the progressive business man and that he is interested in every suggestion and idea which may help in bettering his service and his business methods. We propose, during the year 1921, to give no further editorial consideration to any form of direct criticism but to confine our efforts to the development of constructive suggestions for the architect, individually and collectively. If every member of the profession will also adopt this attitude and seek to place his service and his profession in its rightful position in the business of the community it is logical to believe that architecture will soon stand in public estimation not only as a great art but also in its rightful position as one of the important forms of modern business.

Will there be any sacrifice of art in this development? Think of an artist who produces, in three dimensions of beauty, a building which also functions with machine-like perfection in accordance with the desires of those for whom it has been produced! This is what every architect should strive for—to develop through organization and personal equipment the ability to create buildings in which the elements of art, practicability and economy have been finely considered to produce satisfaction on the part of the client and to form a direct contribution to the community.

Necessity of Organization

It is evident that to achieve this result a number of business elements must be introduced into the daily work of the architect and that his organization should be developed accordingly. At this point it may be noted that practically all types of business have more or less standardized forms of office organization. The average architect's office, however, has never been developed on a scientific plan. The result, as everyone knows, is an unstabilized form of organization with crowded offices in busy times and the payroll cut to the bone when business is slack. It is the purpose of this article, therefore, to correlate and present a few conditions and methods which may offer a constructive contribution toward solving this question of developing an organization for architectural work and maintaining it on a well stabilized basis. Let us remember also that an architectural organization may well be primarily of the one-man type. Here one person may be responsible for many business activities which in the cases of larger offices engage the full time of individuals. It will therefore be of interest to consider the business elements which have a rightful place in the architect's organization rather than to establish functional or personnel charts.

We may commence, therefore, with a broad analysis of modern business requirements from the architect's viewpoint. In setting forth these ideas no claim is made on the score of originality nor are there expressed any fine theories. It has been our pleasure not only to have worked actively in the architectural field during the past few years, which have been years of great change in the profession, but to have discussed these subjects with many successful architects in various sections of the country. Consequently such information as may be set forth here consists of the personal opinions and experiences of men active and successful in their application.

The business elements which affect the development of an architectural organization and its service may be broadly divided into two classifications: (*A*) The business interests of the client; (*B*) The architect's personal business interests. We may, therefore, continue our analysis under these subdivisions.

Taking Care of the Client's Interests

There is one certain way of solving the broad problem of retaining and developing a clientele: to so protect the business interests of the client that he will invariably return when he wants additional work done and will readily recommend the architect who has given such service. What brings the client back—art or business? We know

of thousands of cases of disgruntled clients who never questioned the artistic merit of work done by their architects, but we have never heard of a case of dissatisfaction where all of the business elements of the project had been properly and efficiently handled by the architect. The answer seems to be that the organization and the personal capacity of the architect must be developed to a point where the artistic production of the office is of a high standard (for this the client expects), and where each of the requisite business functions is recognized and properly provided for.

The first, and perhaps the most important, of these elements has its application in the early or interpretative stage when first designs in the form of sketch plans are being prepared. Here it is necessary, perhaps, to create designs which will have artistic appeal from the client's viewpoint, or which at least will be accepted by him on the architect's recommendation. Of far greater practical importance, however, is the interpretation of the functional requirements of the structure in such a manner that the designer shall produce a building or a building group which will be efficient in purpose—that is, a veritable machine in the form of a building which, whether it be for investment, manufacture, storage or some form of commerce, will achieve the maximum of production at the minimum of investment and maintenance costs. Right at this point may be found the stumbling block which has impeded the development of many architects—failure to properly grasp the building requirements of the client.

Certainly an architect cannot be expected to have the capacity of a jack of all trades—he cannot be expected to possess full knowledge of specialized industries and commercial activities. It is not necessary to be a banker in order to design a bank—or a manufacturer in order to plan a factory. It *is* necessary, however, to be possessed of an analytical mind in order to determine and correlate the problems peculiar to the building in question. It is necessary to be possessed of an acquisitive mind, ready to study the problem not only from the architectural standpoint but from the viewpoint of the client's business. In many cases architects fail to appreciate the value of the services of specialists. For instance, how many architects in connection with the designing of office buildings have consulted the renting and managing agents *before* preparing the plans? We were told the other day of the case of one large office building where, after plans had been completed, no fewer than 43 recommendations for practical changes were made by the building managers, necessitating the preparation of an entirely new set of drawings. Again, we may cite the question of insurance rates in a large office building. How many architects ever submitted sketch plans to an insurance engineer for suggestions? Yet when the plans for a large New York office building were taken from the architect's office and submitted for insurance rating the cost given was approximately 24 cents. The owner himself submitted the plans to an insurance engineer under whose recommendations for certain changes, with slight additional structural cost, the rate was reduced to approximately six cents—about one quarter of that quoted from the architect's original plans.

Importance of Analysis

Summing up these points we find that one of the first requirements of an architect's organization, from a business viewpoint, is possession by some individual in the organization of the capacity to see each problem from the client's business point of view. This individual, whether he be the architect himself or someone brought in as part of his organization, must constitute a veritable requirements department, functioning in consultation with the owner and the designer, engineer and other experts to determine through inquiry the business requirements of the design. Only when these practical considerations are fully understood should sketch plans be prepared and presented to the owner—and there should be a definite reason for every detail of the design presented. Naturally, the relative importance of aesthetic and practical elements may be said to vary in direct ratio to the importance of these elements in the ultimate functioning of the building.

Architects who have become specialists in industrial construction have not achieved this result because they designed beautiful factory buildings, but rather because through special design they have cut down the dead load of floors—substituted ramps for elevators—cut manufacturing costs by reducing handling distances and through good design increased lighting facilities, provided better working quarters and recognized the value of properly housing the human, as well as the inanimate, machinery.

We have made a particular point of the importance of having in the organization an individual of quick business perception who will recognize the business requirements of a project and in so doing protect one of the important business interests of the owner. This individual may often have the promoter's turn of mind and can act gracefully as the architect's representative when preliminary discussions of a large building project are under way. Usually the architect who is personally possessed of such ability is highly successful. Just as often, the architectural organization which lacks in this respect continues its work in a small way.

Having discussed the fitting of design to the business requirements of the client, we may recognize another business problem in fitting the ultimate cost of the building to the amount of money available for such investment. Here again we strike a sore point—a reason why many good clients have been lost. This condition has had par-

ticular application during the last few years of fluctuation in building material and labor costs. Fundamentally, we recognize here another direct need which exists in almost every architect's office—more direct field experience—a more practical and direct knowledge of building costs and building methods.

Importance of Cost Estimates

The average owner knows certainly about what amount he is willing to spend on a given building project. It is the duty of the architect, as a building expert, to show him what kind of a building he should have and how large a building of this type he can get for the money he is willing to spend. It is the important function of the architect *to disappoint the client immediately rather than ultimately*, at least as far as the cost of building may be concerned. We are reminded of the famous advertising slogan, "Eventually, why not now?" This certainly applies to building costs and the architect who may gain a reputation of "building within his costs" is also building for the future in no uncertain way.

Of course the reason that ultimate costs so often overrun is largely because insufficient care is given to the important question of estimating. Certainly in the organization, or available to it, there should be an individual, preferably a practical builder, who can really analyze costs. It is true that no man can estimate accurately these days, particularly on sketch plans, but it is equally true that there is no excuse for glaring misstatements of cost. If the architect's organization is not equipped to give preliminary estimates there will always be found dependable and experienced builders whose services may be retained to assist in preparing preliminary estimates. Such services should be paid for on a consulting basis.

Many a successful architect's organization has acquired as a regular staff member a practical builder who acts as field superintendent, estimate checker, purchase order checker, follow up and practical utility man.

Thus far we have considered an architect's organization which has the ability to turn out good design, the capacity for adapting the business requirements of the clients to units of design and the ability to limit the sizes of the buildings to the purses of the owners. All the service an owner can ask in addition to these points is that he shall get the best of materials and workmanship available for the money he entrusts the architect to expend in his behalf.

Organization and Team Work

Here again we find not only a question of organization but of team work within the organization. While the architect, except under unusual conditions, is not called upon to carry out the direct purchasing of materials and hiring of labor, he is of course responsible for the kinds of materials and labor that go into the building. It is his duty to keep thoroughly abreast of developments in the material markets and with new ideas in sanitary and utility equipment. Under his specifications, and subject to his approval, the materials and equipment for the building will be purchased and installed. To show how important one of the larger offices considers the activity of keeping abreast of developments in the way of available materials and equipment we may say that a small department is maintained, the sole business of which is to know of every new idea offering convenience to a guest in a hotel room. Of course this organization specializes in the designing of hotels, but one reason why it has become a great organization has been its close attention to the materials, equipment and methods which the market has to offer for the benefit of its clients.

Every architect, large or small, has the opportunity of studying the market before him at all times. In terms of organization, this means record and reference file clerks. It means the maintenance of an orderly file of catalogs and advertising information as well as a file of precedent in design. It is safe to say that in no group of business offices entrusted with the expenditure of vast sums of money for clients are reference files and records so carelessly maintained as in the offices of most architects. The average architect passes serenely through the bombardment of manufacturers' catalogs—they fall to the right and to the left and seemingly do not affect him. As a matter of fact, the architect cannot be expected individually or through any member of his organization to read every piece of advertising mail matter sent into his office. What is done in many instances—and always should be done—is that all matter descriptive of materials, equipment and methods should be carefully filed for reference when the subject is under consideration. Every member of the organization should recognize the importance of such reference files and should contribute to their proper maintenance by sending to file valuable data obtained from any source. Thus the control of the purchase of materials and equipment will be placed upon a scientific basis of cost and quality comparison. This is of particular importance on a cost-plus project where the architect approves all individual purchases.

Field Supervision

We come finally to the important question of supervision in the field. The relations between the architect, builder and owner offer a complex subject and one affording opportunity of lengthy discussion. For the purpose of this article we may say that one definite need of a practical architect's organization is a dependable supervision department the personnel of which consists of individuals who have had broad experience in actual construction work and who are possessed of sufficient diplomacy and tact to expedite rather

than block progress on a work. It may be remembered also that the owner is pleased to see the architect himself on the ground occasionally. There is today in the average architect's office too great a separation between the designing department and the actual field work. Wherever possible designers should have an opportunity of checking their own work in the field if only for the practical experience thus afforded.

The Architect's Personal Business Interests

We have considered the business forces which should be properly developed through the architect's organization as a protection for the interests of the client. In developing his business the architect must also give serious consideration to his personal interests which include production and overhead costs, the distribution of profits and the maintenance of an office organization in dull periods.

The architectural organization will take one of three forms: complete ownership by an individual, a partnership or a corporation. After serious consideration of the nature of the business it would seem that the best form of organization for the architect is a partnership. The average architect's office, carrying on a professional service business, represents practically no investment or capital value. Consequently the ownership of the business means only a right to a certain division of the profits, carrying also the responsibility of meeting deficits.

Certainly a successful organization of this nature develops a reputation and good will, sometimes of great value. As a rule, however, this value is of an intangible nature and can be passed on in the form of the architect's estate only in so far as the remaining owners of the business may agree to pay certain sums to the estate as compensation agreed upon during the life of the architect in question.

A partnership constitutes an ideal form of ownership in this business for various other reasons. An opportunity is offered for the development of a business partnership in which one member is the architect in fact, while the other may be the business man, the diplomat and possibly the "mixer." An organization of this kind, with junior partners developing different aspects of the business, is the ideal organization. Invariably such an organization functions successfully, and with here and there an exception it will be found that the really successful organizations are built upon this plan.

The question of profit sharing has often been brought up for consideration and solutions of many kinds have been attempted without any striking success as far as we know. There is probably no business which fluctuates so greatly. A busy building season comes and all offices are rushed, the demand for draftsmen becomes acute, and the architect prospers. In 60 days the whole situation may change. Office forces are reduced and draftsmen seek everywhere for work. The principal reason for such rapid fluctuation is of course the fact that two or three large jobs will keep the average organization very busy. The architect's product must be sold before it is manufactured, if we may compare his business to that of a manufacturer.

Methods of Profit Sharing

It is evident that those who share in the profits should share in the losses which arise from time to time. Profit sharing, except among those who actually own the business, should therefore be limited.

The cleverest manner in which the general situation has been met seems to us to be the plan developed in one large New York office. This is a partnership with senior and junior partners as described in foregoing paragraphs. Instead of profit sharing this office has developed another plan which helps greatly in maintaining a strong organization. A share of all profits (about 25 per cent) is set aside regularly in the form of a sinking fund. This fund is used during lean periods to pay the salaries of draftsmen and other employes carried on the regular force. Consequently a position in this office becomes highly desirable as it is known that work will be regular and that a position can be held even through a long lean period. A maximum annual sinking fund credit is established and if the percentage of profit overruns this amount a division among employes is made at Christmas in accordance with length of time of employment and amount of salary.

Another method of developing added interest among employes is the assigning of certain projects to designers and draftsmen who are to receive a percentage of profit netted on the work. This method has the value of enlisting the full interest of employes in keeping overhead costs down and in following the work to a successful conclusion. In many offices the designer carries full responsibility for inspecting the work in the field as it progresses.

Meeting Fluctuating Conditions

In view of the known fluctuation of the architect's business it will undoubtedly be of interest to describe the method of maintaining a balanced organization which has been used successfully for several years by a well known firm of architects. This organization consists of the two partners, who employ directly about ten draftsmen. At times there is being handled through this office enough work to keep 100 or more men busy but the organization is never increased or decreased. The policy of this firm is to let out a large proportion of its work to smaller offices, particularly of the "one-man" type. Arrangements are made with these offices almost as though the owners were draftsmen employed in the office.

Payment is made on a time basis, likewise, and all plans bear the imprint of the controlling office.

This plan has many merits. It is easy for the owners because they have none of the troubles of the fluctuating organization. They can take on any amount of work on instant notice and are never at a loss to know how to build up the working force quickly. Again, work given out in this manner helps the younger architect to maintain his small organization and gives him the same practical experience that he might receive if he were carrying the work on his own account. The architects who control this business report that the work turned out is in every manner satisfactory and that service to the owner is often quicker.

An Example of Organization

As in every line of business the subject of efficiency is of great interest in the architect's organization. Undoubtedly, in most offices there is a large amount of waste effort. Seeking the cause for this we find that it is primarily a matter of improper organization and assignment of duties, and that much time is wasted because of poor filing and record keeping systems.

In one of the most efficiently managed offices we have come in contact with, all work is carefully but automatically routed. This office is organized in several departments or divisions:

1, Executive
2, Contract Department
3, Auditing Department
4, Production Division
5, Construction Division

The work of each Department is thoroughly defined. The Executive, through a system of memoranda, reports and progress charts, has his fingers at all times on the pulse of the work. The Contract Department would correspond to the sales force of a commercial organization. Here a full record is kept of all contact with clients *until a contract is signed to carry out the work*. Then the responsibility of the Contract Department ceases except to call on the client occasionally, and independently of the rest of the office, to make certain that he is happy in his treatment by the office. The Contract Department, needing rough sketches or any data in connection with the closing of contracts for work, gets it through written request to the Executive. Regular executive meetings of department heads eliminate much running back and forth.

After the Contract Department has closed with a client a written outline of requirements is prepared and the Executive orders the work carried out by the Production Division while the contract is filed with the Auditing Department. The Production Division consists of designers, draftsmen and engineers. In the Construction Division are the estimators, superintendents and field accountants.

Having fixed upon requirements all plans are called for at a certain date, an advance progress work sheet having been prepared and posted. Costs and practical field information are given as required, by the Construction Division, and the first draft of working drawings is checked by this Division for practical suggestions tending toward more economical or quicker construction. Similar specifications are checked. Whenever it is deemed advisable the plans are checked by a specialist and it is found that cost saving and better service often result. For instance, if plans are required for a building such as a large public garage, suggestions are obtained not only from the owner but from a recognized expert in the management and equipment of such buildings.

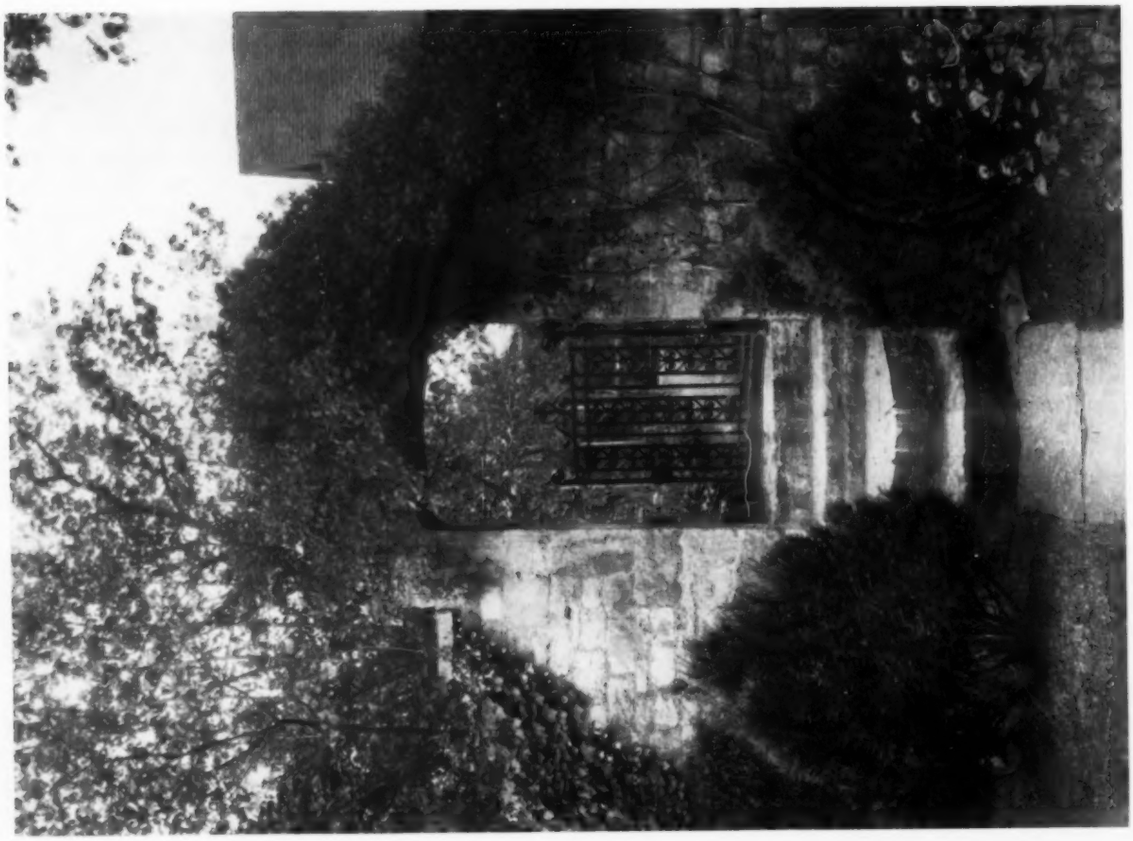
When plans are completed and the work is commenced in the field every assistance possible is given to the builder and to sub-contractors by the practical builders in the Construction Division. Independent progress sheets are maintained and at every point this independent building force is being exerted to save money for the owner. Thus simple, accurate reports can be rendered to the owner as funds are expended and he can at all times have a full record of progress.

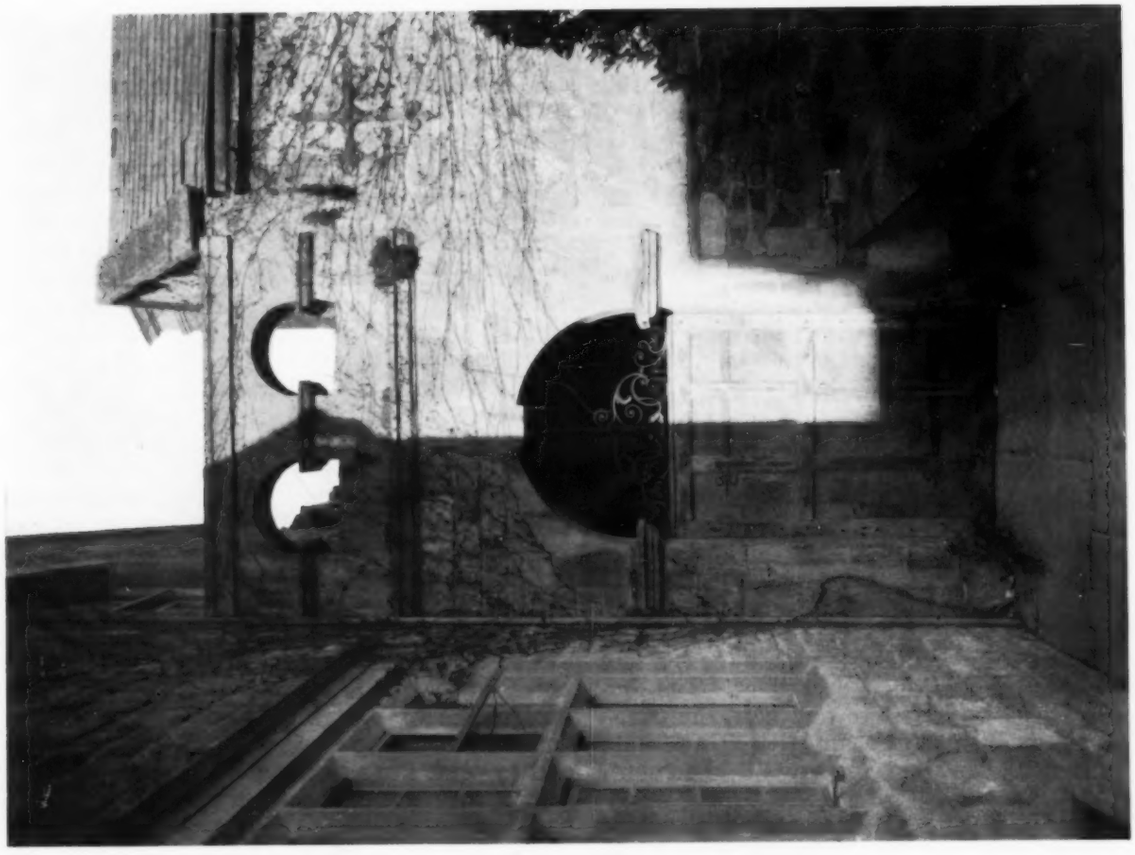
The Working of an Office System

In this office all mail is routed by the Auditing Department where the general books and records are kept. The detailed cost records are kept in the Construction Division and audited regularly by the Auditing Department. All manufacturers' literature is sent directly to its classified place in the files and everyone in the office knows that when he is interested in any building material he can find the latest information possessed by the office in its proper place in the files.

This arrangement provides a clean-cut division of authority and responsibility. All business that may come into the office is quickly classified and sent where it belongs. It is either of an executive or a sales nature, has to do with accounts or records, is a matter of design and specification or is relative to a job already under construction. It may be interesting to note here that the Production Division has an inspecting architect visit each project regularly and independently of the Construction Division—thus affording a cross-check on progress.

It must be evident that efficient organization in any architect's office involves a careful study of business requirements and the allocating of various activities in accordance with the size of the organization. The principles of any successful commercial organization may, in part, be applied to that of the architect. Regardless of the size of the organization, if it is to be placed upon a sound, businesslike basis, the first step is to carefully analyze the various responsibilities of the business and to place them with the right individuals, together with sufficient authority to meet them properly.





TWO DETAILS FROM THE COTSWOLD DISTRICT, ENGLAND

PLATE DESCRIPTION

INDUSTRIAL LABORATORY, U. S. BUREAU OF STANDARDS, WASHINGTON, D. C. PLATES 6, 7. In this building, of which Donn & Deming are the architects, is maintained an organization of specialists for research and for the testing of materials and appliances used in various industries. The main portion of the building is 60 x 350 with three wings, each 60 x 104, four stories in height and has the form of a letter E. The two courts are roofed over at the first floor level, forming two one-story shops. The floors and structural frame throughout are of reinforced concrete enclosed with walls of brick with Indiana limestone trimmings. Partitions are of terra cotta blocks plastered on both sides; floors have granolithic finish and terra cotta fillers have been placed between the concrete joists, thus providing for flat ceilings.

The center wing of the three is of special construction, forming an open court from the basement to the third floor for installing various testing machines. The ground floor area of the building is about 1¾ acres. Work was begun in February, 1918, and completed in twelve months and at a cubic foot cost figure of less than 30 cents.

THE U. S. ARMY SUPPLY BASE, SOUTH BROOKLYN. PLATE 8. In planning these buildings the problem was two-fold: to provide for maximum war requirements of direct rail-to-ship movement and of storage and to provide a terminal which could be advantageously operated for commercial uses later.

The vast structures of concrete which were designed by Cass Gilbert embody efficiency of the highest degree. The buildings include two main warehouses known as Warehouses A and B. The illustration shows one view of Warehouse A which is 980 x 200 and eight stories and basement in height. Both these warehouses are entirely of reinforced concrete of the flat slab type. They are of particular interest to architects for their architectural character which has been achieved without the use of a single moulding or cornice.

THE SCHWINN BUILDING, CHICAGO. PLATE 9. This structure, of which Walter W. Ahlschlager is architect, affords a striking example of the successful use of concrete in large commercial buildings. In this building, 80 x 600, not a single brick has been used; the concrete construction consists of the structural mass poured in as small sections as the calculated stresses and strains would allow and while the concrete was still green the forms were stripped and the walls rubbed down with pumice stone. Even the sills are of concrete cast at the same time that the spandrels were poured.

The small squares of ornamentation at the head of the first story windows and also under the coping are of cement colored with a red pigment and were cast in a mould on the site and then nailed to the inside of the forms so that the concrete could be poured around them. Projecting ornament is of terra cotta. The entrance at the end of the building, shown in the illustrations, is entirely of concrete.

BUILDINGS FOR JACKSON MILLS, NASHUA, N. H. PLATES 10, 11. The importance of good design in manufacturing structures is shown in the views of mill and office buildings designed by Lockwood, Greene & Co., Engineers.

The design shows a classic pylon treatment; the lower story has a rusticated surface which gives an appearance of solidity and strength to the mass of the building. All architectural character is the result of studying proportions of the structural parts; the entire building is of reinforced concrete, the exterior finish being had by rubbing with white cement. The lines are extremely simple but to relieve their severity window sashes have been painted an olive green which gives a pleasing contrast to the gray of the concrete. The office building is in keeping with the mill in design but it is of terra cotta blocks stuccoed, inasmuch as this construction proved less expensive in the small building.

OFFICES OF THE NEW ENGLAND POWER CO., WORCESTER, MASS. PLATE 14. This building, of which John Barnard is architect, shows an excellent handling of a problem which is rarely so successfully solved. A structure which is really a business building intruding into a community given up to residences is only too often the entering wedge which begins the process of impairing property values.

In this instance, however, a business structure has been made to resemble a residence which is a distinct asset to the locality and the interior has been planned to offer the maximum in the way of convenience for the purpose in view. Each floor consists of one large open office space with a vault and a toilet upon the lower floor.

BRANCH FIRE STATION FOR CITY OF SALEM, MASS. PLATE 15. Waterstruck brick laid in Flemish bond has been used for the walls of this fire station of which Frank S. Whearty is the architect. The foundation is concrete and construction of the first floor is of steel framing with concrete slabs with steel I beams and wooden joists for the second floor. The roof is of wooden rafters. Sills, imposts, keystones and cornice are of limestone. The hose chute is just outside the front pier and in the basement are the hose drying racks and a drying room for clothes.

HOUSE OF PHILIP P. BARBER, TENAFLY, N. J. PLATE 16. The economy of planning a house of small or moderate size within a rectangle is, of course, well known but it is sometimes difficult to build within a form so restricted and yet avoid a box-like appearance.

The illustrations and plans show a house of which R. C. Hunter & Bro. are architects. Although the house covers an area of only 26 x 40 the plans show nine rooms of excellent size and three baths.

The exterior of the house is treated in a very simple manner, the emphasizing of its strong horizontal lines giving it a somewhat low appearance which brings it into proper relations with its elevated site.

EDITORIAL COMMENT

What Does 1921 Promise for Architects?

THIS question is undoubtedly in the mind of every architect. With each recurring commission laid aside for more favorable circumstances he has visualized the better opportunities of 1921 and taken new courage. Is there reason now to consider his optimism justified? The new year is indeed the hope that has kept the building industry alive through these many months of increasing depression. The new year is now confidently expected to dispel a large measure of that uncertainty which has been a retarding force ever since 1914.

In the last few months we have seen conditions governing general business undergo a vast change. The abnormal period we have passed through was purely the result of the war—and as the war itself was of greater extent than the world had before seen and without precedent, so too was the economic disturbance following it incapable of being judged by the precedents established by other periods of readjustment. The most clever minds of the country were unable to foresee the suddenness with which the change in sentiment and business relations was to take place.

The new year finds us in the midst of readjustment, facing new conditions with the positive assurance that those of the last year will not return. We have by no means reached a period of stabilization; the reaction from absurdly high price levels has been so great and liquidation so rapid that the present market values of many commodities have gone below the actual cost of production. There will without any question be an upward swing to the curve as soon as public confidence is restored but it will be a few years before any permanently stabilized level is reached. The outstanding advantage of the present situation is the entire absence of any fear of a money panic. The only requirements for industrial and commercial prosperity that we lack are adequate purchasing power of the public and the buying spirit resulting from general confidence.

Promise of better things may be taken from the fact that in spite of great inactivity we enter the year 1921 on a sound *deflated* basis. Business of practically any character may now be undertaken with assurance of success whereas in the past years the most careful attention was necessary to provide means of meeting excess costs through immediate and large profits if failure was to be avoided. In building construction very little of that now nearing completion will suffer because in the great majority of instances leases producing enough income to reduce the inflation in a few years were secured in advance of construction.

The country is everywhere, and in all types save possibly industrial work, greatly underbuilt. Housing presents the outstanding shortage and this must soon go ahead under private initiative or the increasing population will make governmental aid necessary. It is estimated that 3,340,000 houses must be built within the next five years if the ratio of 100 houses for 115 families that existed in 1915 is to be regained. In 1890 there were 110 families to every 100 houses; today the average is 121 families to every 100 houses. If residential building in future proceeds no faster than in 1920, at the end of five years there will be 130 families to every 100 houses.

An illuminating index to the amount of building that has been postponed because of unfavorable conditions is given in some statistics prepared by the F. W. Dodge Co. In normal years, the total estimated cost of projected work is about 50% in excess of the amount of contracts actually awarded. In 1919 the excess of contemplated work over actual construction was 68%, and in 1920 the abnormally high figure of 92%. The deficit of building has, therefore, steadily increased.

Active steps to supply this deficiency will be taken when public confidence is restored through satisfaction that a reasonably stable price level has been reached. This condition will not occur immediately. It was several months after the armistice before construction proceeded to any extent. It was delayed until there existed a general feeling that post-war prices were going to remain constant for a period of years. With the start of a construction program in 1920 that promised to eclipse all records prices began to climb. The greed for profits and power by both labor and capital was so great, however, that it proved a boomerang and our inflated prosperity fell of its own weight. The sordid disclosures of the investigation of building practices in New York will have a wholesome influence and we may look for moderation in adjusting prices to demand in the next period of activity.

It is generally expected that the spring months will see prices of building materials stabilized on about the 1919 levels and that with the public realization of stabilized conditions, construction will start in fair volume. With the beginning of activity a healthier tone will be given conditions generally, because prices will become firm and possibly advance slightly, removing the deterrent effects of a falling market. Architects are at the threshold of a period of development in which the extent of their participation will be measured only by their ability to serve.

THE EDITOR'S FORUM

The Architectural Forum for 1921

THE year 1921 is confidently expected to witness the resumption of normal building activities. It will, we hope, hold great opportunity for the progress and development of American architecture after the serious interruption of the world war.

Conditions that will surround the practice of architecture in this new era, it is fair to believe from evidence at hand, will differ in many respects from those obtaining in past years. In the first place, the standard of performance demanded of the architect is higher now than at any previous time; he is expected to produce buildings of great architectural character, to plan in such a capable manner that every possible convenience will be afforded, and above all he is expected to produce these results on a rigid economic basis. His building must be accomplished with economical construction methods; he must be able to select from a vast number of materials and types of construction those that will best suit particular conditions and have his choice stand the closest scrutiny.

Thus the complexity of the profession's work increases from year to year. It necessitates the closest attention of architects to the progress that is being made almost daily in the various branches of the building industry.

It is to aid seriously in providing accurate and dependable information that the efforts of the editors of THE FORUM will be devoted in 1921. Our own obligations grow with those of the profession and while we have always conscientiously served the architect to the best of our ability we pledge ourselves to extend our efforts wherever possible in this period of development. THE FORUM aims to perform a useful function in the architect's office. It recognizes the various divisions of architectural work and endeavors to furnish data that will be found of definite value not alone to the designer, but to the construction expert, the specification writer, the executive who must confer with clients on business problems, and the drafting room where efficiency is necessary both to good architecture and adequate profits.

This number is indicative of the service THE FORUM will render its subscribers in 1921. A new arrangement of the plates will be noted; this we feel will make for greater enjoyment in reading inasmuch as the illustrations and related text are brought together. The plates will furthermore be selected to cover in the course of the year all the principal types of buildings architects design; the subjects will also be chosen so that a large portion will come under the classification of moderate cost work. The guiding factor in our selection will be, as always, architectural quality.

Articles on Design

FOR the designer we have in preparation some of the most interesting material ever presented in an architectural publication; a series of monographs on the smaller and more interesting Palladian villas of the Veneto will appear at intervals, providing a source of inspiration of value for domestic work of imposing order and what is perhaps a wider application—institutional and minor public buildings. Our treatment of colonial work which is recognized as a FORUM feature will be continued as well.

An interesting series of illustrated articles on Mexican architecture is in preparation; some of the most valuable and interesting detail plates from the standpoint of architectural inspiration and draftsmanship that have been prepared by Howard Moise from actual measurements of old work in England, France and Italy will be published.

Other articles of undoubted value will indicate successful handling of design for execution in materials and by methods of construction that are in process of development and as applied particularly to industrial and mercantile building.

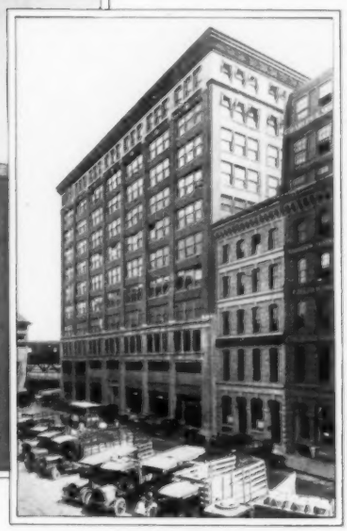
Allied Technical Subjects

THE special phases of architectural practice embraced in engineering and construction, business and finance, will be continued in regular monthly departments, the subject matter being carefully prepared by qualified experts to meet the needs of the average architectural office. One of the most gratifying things of the past has been the wide interest manifested by architects in our articles relating to the financing of building construction and the promotion of building enterprises. This response has prompted us to provide additional opportunities for giving direct service to our subscribers in specialized fields such as this for which they frequently have need.

A Consultation Committee

WE have fortunately been able to arrange with a number of men who are widely known as experts in their respective fields to serve as members of a Consultation Committee to which questions coming from subscribers may be submitted for reply. The many occasions in practice today when need for information arises that cannot be supplied through the usual office organization make a central agency where advice may be obtained of definite value. THE FORUM we want thought of in architects' offices as more than an architectural magazine—it can and should be of direct and constant service to its subscribers and we invite you to so regard it.

Brewer Building, Boston, Mass. Architects: Densmore & Le Clair, Boston. Contractors: George A. Fuller Co., Boston. Linoleum laid by C. C. Bailey Co., Boston.



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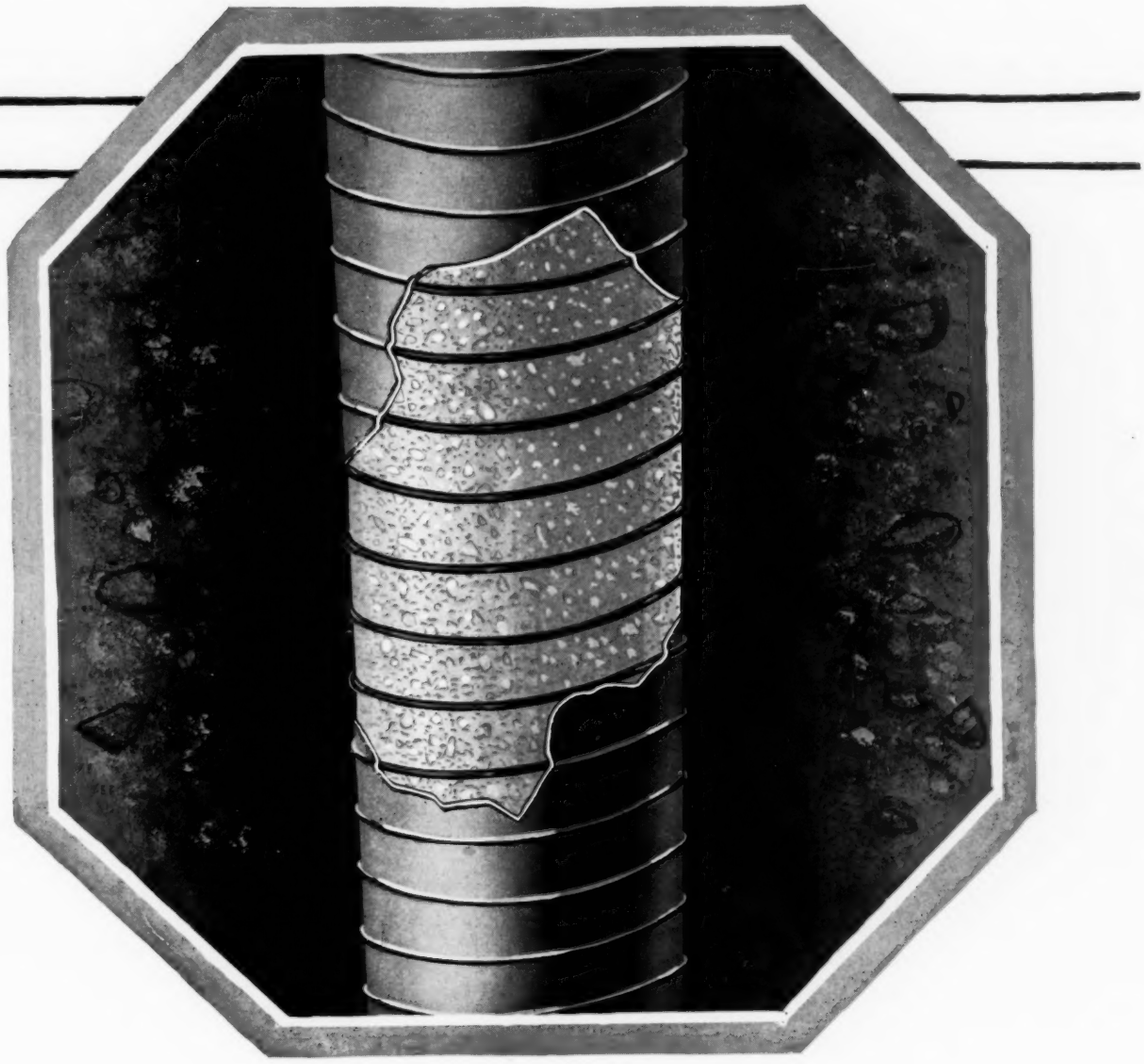

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